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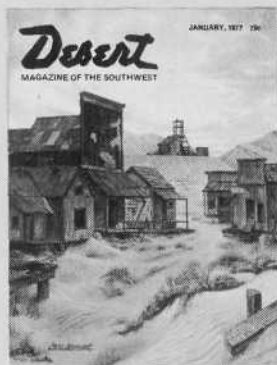
Volume 40, Number 1

JANUARY 1977

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THE COVER:
"Golden Memories," an original 24"x30" oil painted especially for *Desert's* cover by Leo Nowak, of Ridgecrest, California.

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EDITORIAL AND CIRCULATION OFFICES: 74-425 Highway 111, Palm Desert, California 92260. Telephone Area Code 714 346-8144. NATIONAL ADVERTISING OFFICES: JE Publishers' Representative, 8732 Sunset Blvd., Los Angeles, California 90069. Telephone Area Code 213 659-3810. Listed in Standard Rate and Data. SUBSCRIPTION RATES: United States, Canada and Mexico; 1 year, \$6.00; 2 years, \$11.00; 3 years, \$16.00. Other foreign subscribers add \$1.00 U. S. currency for each year. See Subscription Order Form in this issue. Allow five weeks for change of address and send both new and old addresses with zip codes. DESERT Magazine is published monthly. Second class postage paid at Palm Desert, California and at additional mailing offices under Act of March 3, 1879. Contents copyrighted 1976 by DESERT Magazine and permission to reproduce any or all contents must be secured in writing. Unsolicited manuscripts and photographs will not be returned unless accompanied by a self-addressed and stamped envelope.

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A Peek in the Publisher's Poke

AS WE mentioned in our December column, we have planned some new features for 1977 that will lead you to new desert adventures. We are going to start with Dick Bloomquist's invitation to take you to 40 native palm oases of the California Deserts. I'm sure that when you read his introduction in this issue, you will not want to miss a single one and will be planning many enjoyable outings for the future.

For you "lost mine buffs," a special feature in this issue is Harold Weight's latest theory on Breyfogle's lost ledge, and he'll really keep you on your toes. After reading the article, it may seem appropriate to you, also that the *Tonopah Times-Bonanza* newspaper of November 19th carried an article that the Smoky Valley Mining Company is planning to market approximately 100,000 ounces of gold-silver ore annually—and that's a real bonanza!

Our naturalist, K. L. Boynton has greeted 1977 with the Prairie Rattler Clan, and Mary Frances Strong has a fascinating field trip in the area around the southern end of Death Valley.

Lucile Weight starts 1977 off with one of her articles on the native foods of the Indians. We have had many, many requests for information on this subject. Bill Jennings extolls on the ABCs of California's great Anza-Borrego Desert State Park, Herbert Stahnke cautions us on the spider bite, John Southworth leads us to the Hassayampa Box in Arizona and Howard Neal's "Desert Ghost" for the month is Murphy's, California.

As we celebrate our 40th year of publication, we wish all of our readers and advertisers a most prosperous 1977.

William Kuyatt

Anza Conquers the Desert

Commissioned by James S. Copley

Written by Richard F. Pourade



The colonization of California in the 1770's received its greatest impetus with the opening of an overland route from northern Mexico. The man who opened it was Juan Bautista de Anza. This book is the story of his conquest of the Great Desert which for two hundred years had impeded the northern advance of the Spanish Empire. The colonists who were led into California by Anza founded the presidio of San Francisco; other colonists who came over the road opened by Anza helped found the city of Los Angeles.

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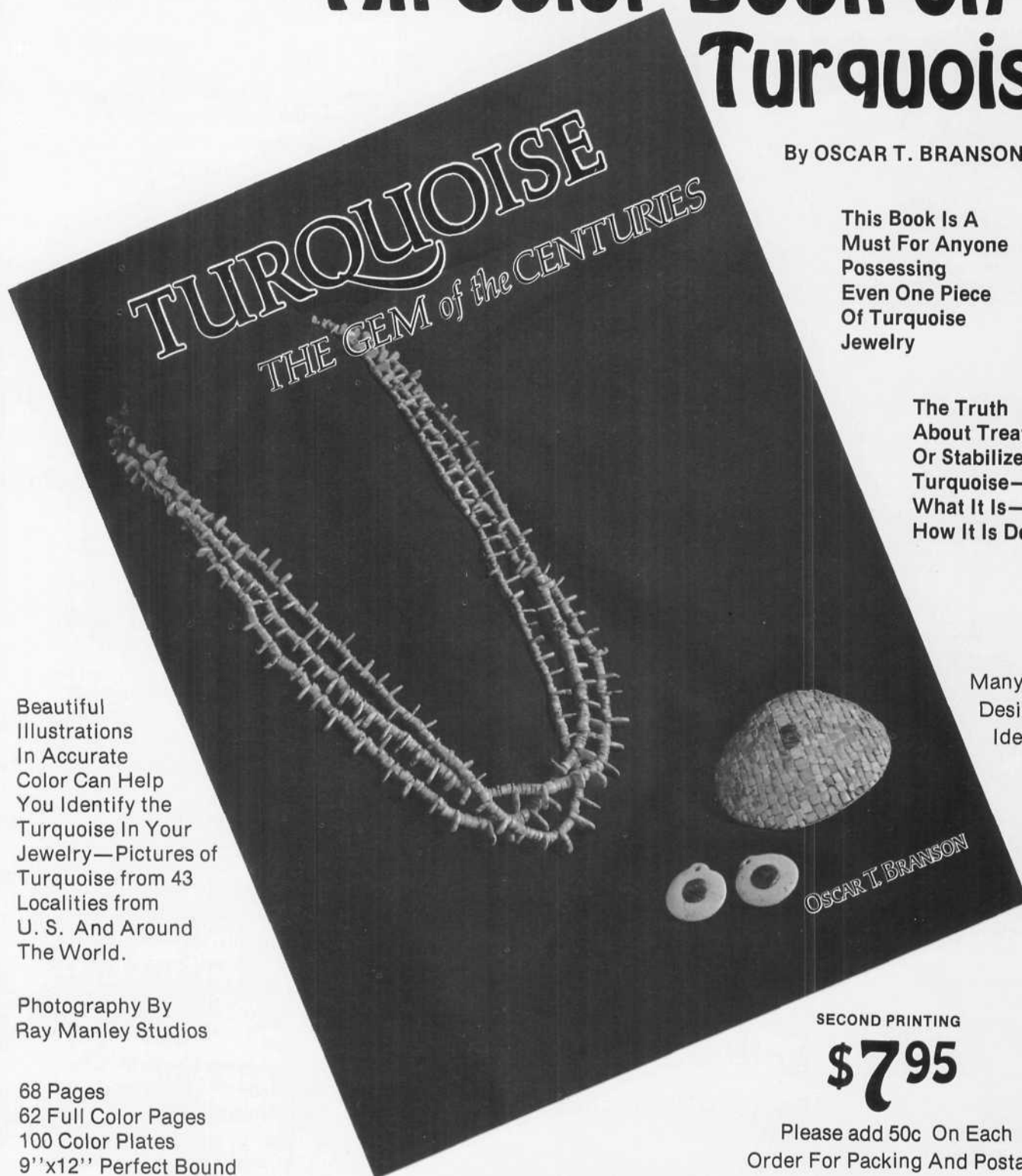
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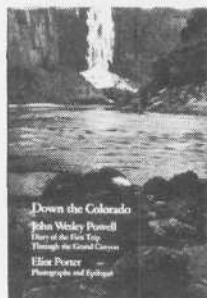
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DOWN THE COLORADO
John Wesley Powell
Diary of the First Trip
Through the Grand Canyon
Eliot Porter
Photographs and Epilogue

*Photographs and Epilogue
by Eliot Porter*

One hundred years ago, ten men in four boats swept down the raging Colorado River on the first trip through the Grand Canyon. Major John Wesley Powell led the epic journey, over rapids considered impassable, to chart the unexplored river and its surrounding canyons. On August 30, 1869, 13 weeks after the expedition left Green River Station in Wyoming Territory, the one-armed Major, with only two boats and six survivors, emerged from the canyon to find men searching for their remains.

Down the Colorado contains John Wesley Powell's dramatic journal of 1869, edited and introduced by Don D. Fowler, and it is as exciting today as it was when portions first appeared in *Scribner's Magazine* ninety-five years ago. Drawings and photographs, the work of Powell's contemporaries, enhance the text.

Eliot Porter, America's foremost photographer of nature, has contributed a

48-page gallery of four-color photographs to reveal fully the beauty of the Grand Canyon country and the thrill of a Colorado River trip. Dr. Porter made several river trips to gather the breathtaking illustrations for this book. His epilogue is a memorial to Glen Canyon, which today lies drowned and lost; it is also a tribute to the river that still roars through Marble and Grand Canyons.

Here is a book that captures the beauty of canyon country, America's proudest heritage, while providing the record of a journey of discovery unequalled in the continent's long history.

Large 10"x14" format, hardcover, originally priced at \$30.00, the publisher's close-out price is now only \$9.98.



THE AMERICAN WEST
A Natural History

By Ann and Myron Sutton

Here is a first-hand, information-packed description of the natural wonders, animal life and plant life of the 15 major natural areas of the West. It is also an expert explanation of how these areas came to be geologically what they are.

Together with a magnificent collection of pictures and maps it makes clear to anyone interested in wildlife, natural America and particularly the Land of the Big Sky just why certain forests, animals, flowers, rivers, deserts and caves are where they are.

Beginning with the rich life of the great Southwestern deserts and plateaus, the authors move—even as do tens of thousands of tourists every year—up through the Grand Canyon country, the lesser canyonlands, the high wilderness areas of the Southern and Middle Rockies, the basin and range province and into the high Sierras. They then explore the Pacific beaches and tidepools, the volcano country of the Cascades, the Olympic rain forest, the glaciers of the Northern Rockies, the

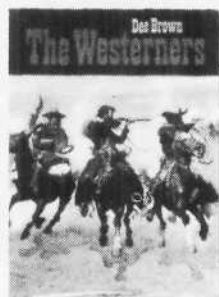
Badlands, the wilds of western Canada and finally, that last frontier, Alaska.

Its pictures, too, are not just pretty "scenics" but selected to give maximum information about specific land formations, about animals from wolves to butterflies and about plants from redwoods to lichens.

It is finally a history of man's exploration and use of these incalculable riches, of what is being done to preserve them, and a plea for the preservation of the unspoiled beauty of the wildlands and their promise of serenity. It is a book not only for the student of western geology and ecology, but also a guide for the visitor and naturalist, and a series of pleasant journeys for the armchair traveler.

Among the 50 photographers represented in the book are such masters of their craft as Ansel Adams, Eliot Porter, Philip Hyde, Don Worth, Josef Muench and Bill Ratcliffe.

Large format, hardcover, 194 illustrations, including 71 in color and 16 maps and drawings, 256 pages, originally published at \$25.00, now only \$12.98.



THE WESTERNERS
By Dee Brown

In *The Westerners* Dee Brown follows the frontiersmen into our heroic West. His earliest guides are the Spaniards, the first Europeans to explore the American Southwest in the 16th century. But from here, instead of writing another chronological history of the opening of America's West, Mr. Brown tells the story through the experiences of a few influential or representative Westerners—people like Jedediah Strong Smith, Susan Magoffin, Brigham Young and Sitting Bull.

It is primarily a story of movement—of the early explorers, of the trappers and fur traders, of the Fortyniners, of the builders and operators of stagecoach and mail services, telegraphs and railroads, and of course of the Indians they pushed

before them. It is also a tale of invasion. Many of the explorers were motivated by greed rather than adventure and the land developers imagined that Indian land was theirs for the taking.

There were those who were on friendly terms with the Indians. George Catlin, for instance, whose paintings of Indian life provide some of the 32 color and 120 black and white illustrations in this book.

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HELLDORADOS, GHOSTS AND CAMPS OF THE OLD SOUTHWEST

by Norman D. Weis

Come with Norman D. Weis on a 7,000-mile tour of the Old Southwest. See the weathered ruins of 67 ghost towns and abandoned mining camps—some famous, others little known, and one never before mentioned in written history.

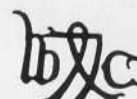
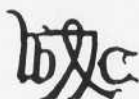
A lively, humorous text and 285 stunning black-and-white photos recall the roaring times when miners dug for gold, silver, or coal in California, Arizona, Nevada, New Mexico, and the southern portions of Colorado and Utah.

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*The black widow spider with her tell-tale marking.
Photo by Robert H. Wright, Tucson, Arizona.*

HOW TO PREVENT A SPIDER BITE

by **HERBERT L. STAHNKE, Ph.D.**

Emeritus Professor and Director
P.A.R.L., Zoology Department,
Arizona State University,
Tempe, Arizona.

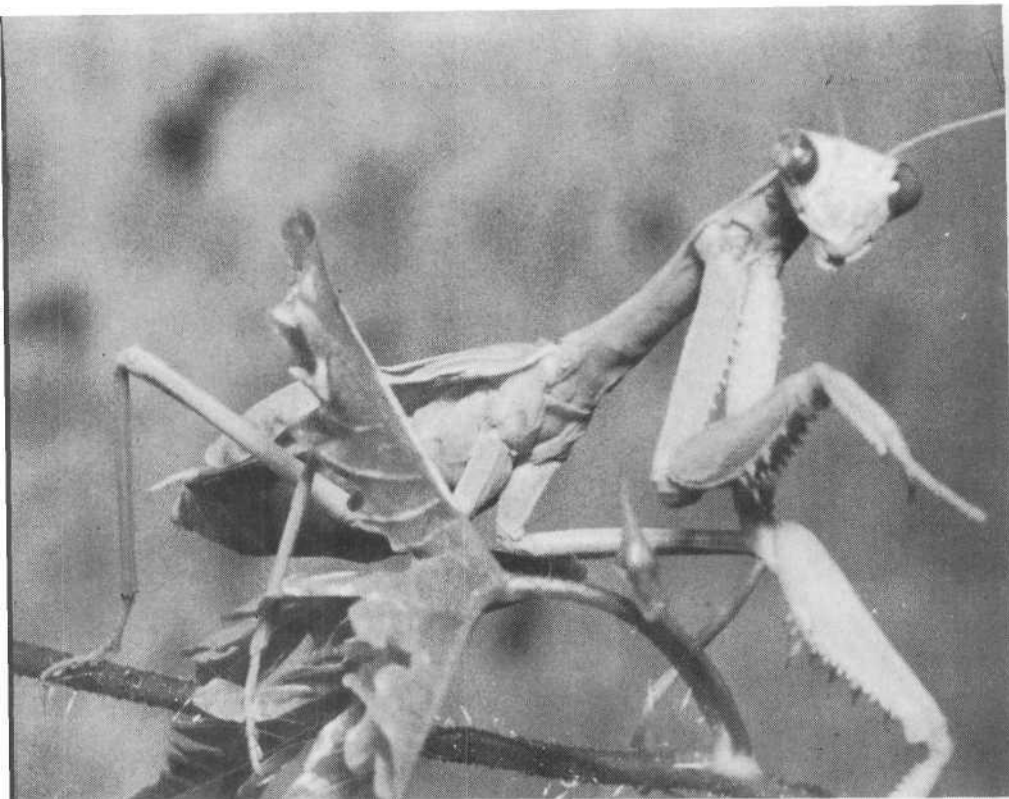
THE OLD truism, "an ounce of prevention is worth a pound of cure" is very *apropos* as far as spider bite or scorpion sting, etc., is concerned. Protection by prevention can be achieved by eradication or control of the spider population within and immediately around your home, and your own behavior.

Eradication or control can be accomplished through the following four methods:

1. Cultural control. This consists of destroying the spider hiding and breeding places, which are essentially the same for scorpions. Piles of old lumber, bricks and trash in general should be either carried away or removed as far away as possible from human dwellings. Garages or other rooms that are used for catchalls, or even orderly storage, serve as hiding and breeding places; especially if these are not disturbed for months.

Good housekeeping discourages a build-up of a spider population. Other hiding places are the backs of pianos, davenportes and on the underside of seldom-used chairs, in clothes closets, under sink cabinets, etc. In general, relatively dark undisturbed niches. Black widows and recluse spiders have been found in all of the above places. These animals do not thrive in an active household in which the status quo of furniture, storage places, etc., is frequently disturbed.

2. Biological control. In this approach the enemies of the spiders are encour-



aged. Sun scorpions (solpugids)—all of which are not poisonous—and the praying mantis are very helpful, as are also most lizards and birds. Since cats destroy lizards and birds, they indirectly encourage the build-up of the arachnid and insect pests.

3. Mechanical control. Spiders and other vermin are prevented from thriving in the home by various mechanical devices. The slipper, subsequently replaced by the flay-swatter, is perhaps the oldest form of mechanical control. Often the elimination of one gravid female spider prevents the production of several hundred spiderlings. Good window screening and tight fitting windows and doors are very important. If you can see daylight around the perimeter of your outside doors or windows, spiders and scorpions can, and do, enter. For the average householder, this is the most important area to check. Proper weather-stripping will take care of this and should be provided by the builder of any new home.

4. Chemical control. Spiders and other vermin, in this procedure, are killed by means of chemicals. This should be the last approach and should be confined to indoor application. If used outdoors to kill spiders, the chemical might prove fatal to praying mantis, sun spiders and

other highly beneficial insects or arachnids as well as the extremely beneficial lizards. The aerosol insecticides sold in stores can be sprayed in crevices, under chairs, behind pianos and other similar hiding places. They are also effective in storage areas, if sprayed so that somewhat of a fog is produced. These sprays are not harmful through contact by dogs and other household pets.

Your behavior is your best protection. When all is said and done, absolute, permanent eradication of spiders cannot be accomplished. Therefore, prevention

of spider bite rests on the principle of "the survival of the fittest." To be fit one must be alert and follow two modes of behavior:

1. *Never place your fingers or bare feet where your eyes cannot see.* For example, a spider may be hiding on the underside of a chair, board, rock, newspaper or magazine. When you grasp the object by placing your fingers under it, you inadvertently press the spider. It reacts in self-defense by biting you.

2. *If you feel something crawling on your bare skin, DO NOT SWAT IT, but brush it off.* Remember that the "fangs" (chelicera) are on the underside of the spider. When you strike it—even though the blow would kill it—the action helps drive the fangs into the flesh. For example, a man, while riding his bicycle, accidentally drove through a large number of "parachuting black widow spiderlings. They crawled over his face and neck. His reaction was to swat wherever he felt them crawling. During the action he was bitten by about eight or ten of the spiderlings. This resulted in a three-day painful hospital "vacation."

Most spiders are beneficial and interesting creatures. Learn of their ways and adjust your behavior accordingly. To be afraid of them is the worst possible behavior and eventually will lead to trouble. Capture one in a jar. Feed it insects and watch its behavior. Your fascination will overcome your "unholy" fears. □



Two natural spider enemies: A praying mantis [above] by Dick Randall; [Right] the solpugid, by Robert H. Wright.



The Hassayampa Box

FOR MANY obvious and good reasons, Wickenburg now wants to be known as the dude ranch capital of Arizona. For years it was just a mining camp at the far end of the "Vulture Road," at a place chosen for available mill water on the Hassayampa River, a typical desert river which is mostly sand. Just south of town low hills bring water to the surface and cottonwoods to the banks of the usually dusty desert wash. Here are many cool and interesting diversions for the desert traveler, with parking and picnic tables provided within sight of the modern highway, combined U.S. 60 and 89, to Phoenix.

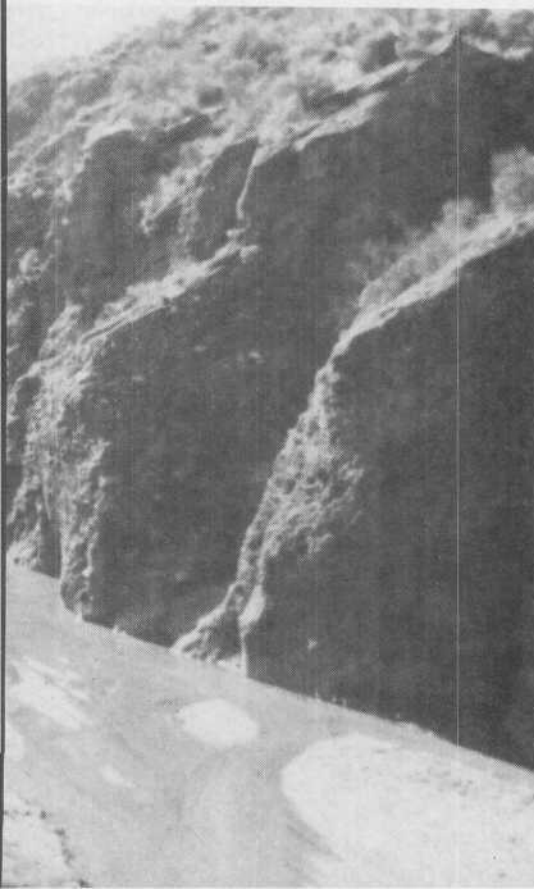
This is all enjoyable enough but the real attraction is off the highway north of town in an isolated area reached only by dirt roads and short walks at a place called "The Box." Here, much as a sub-miniature Grand Canyon, the

Hassayampa has cut its way down through a hard geologic formation rising slowly from below in a failed attempt to block the flow of water. The cut at its deepest is perhaps 200 feet through a hard cemented conglomerate of old stream gravels, dark stained by invading manganese solutions. At its narrowest it is perhaps 40 feet wide and half as deep for a surprisingly straight half mile or more.

Water perpetually flows in the

by
**JOHN
SOUTHWORTH**





Box and shade is always available under the vertical, sometimes overhanging rock faces. Even on the hottest desert days natural air conditioning makes a mile or so barefoot walk through the water very attractive. A quiet walker might even be accompanied fore and aft, at a discrete distance of course, by one or two large white wading birds.

A few range cattle have it good in the Box. Stands of water grass and even water cress abound early in the year. A rider checking stock might visit or a dune buggy might momentarily disturb the silence, but mostly visitors will have the place to themselves for hours at a time.

The Box is a good place to relax, regain perspective and recover your cool. It is a place little changed by the hand of man. The Hassayampa drains a very large area and heavy rain in the

mountains is not unknown. At these times the Box is no place for humans. It runs wild with perhaps 15 feet of churning water that scours walls and bedrock, removing all debris and each time leaving a fresh bed of clean, cool sand. Thus the canyon periodically renews itself, returning each cycle to a condition much as it was before the first human visited it. The only permanent changes are a water gauging station and scars of wartime manganese mining operations.

The Box is not at all difficult to reach with a standard car but do not attempt to go into the river bottom with any equipment that won't float. Although much of the bottoms appears compact and solid, standard Jeeps occasionally *bog down in local soft spots* and even the human foot finds areas where speed is the natural reaction to that sinking feeling. Of course

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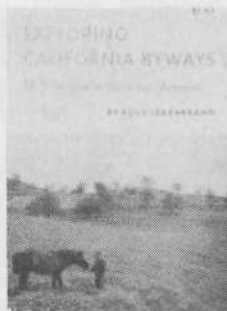
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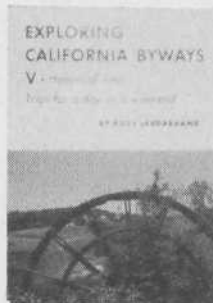
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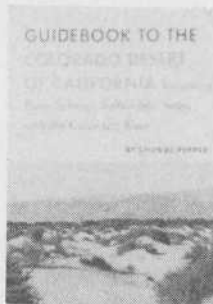
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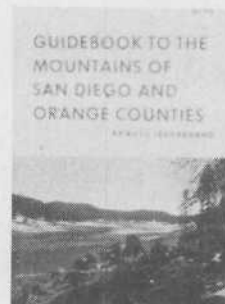
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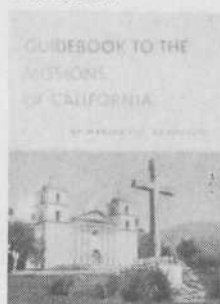
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Guidebook to the
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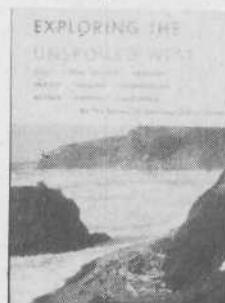
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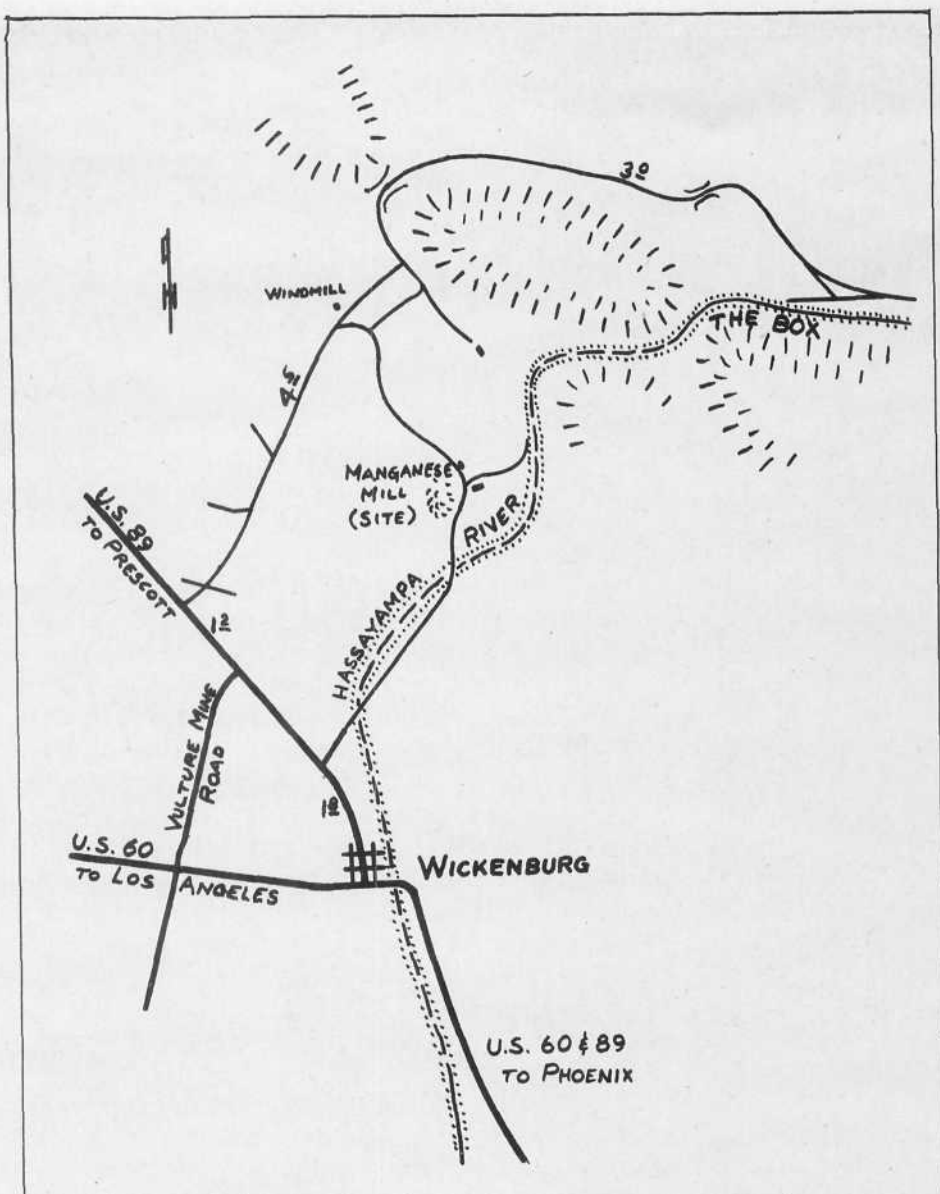
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the human foot is advised to remain on high ground.

All the off-pavement roads shown on the map are good desert tracks which see a grader once in a while. The two river crossings below the Box are graveled and maintained as long as no water flows. The upper road is in and out of washes with some minor rough spots and steep pitches where trailers are not recommended. Campers and standard cars require only normal rough country precautions.

The lower road past the old manganese mill is substantially level all the way but requires a long, hot walk up the sandy wash to the best part of the Box. Carry water and don't take the car into the wash above the mill, inviting as the road might look. There is no

stopping or turning back once you are committed to the sand.

The upper road is long, dry and hilly but puts you within a few hundred feet of the most interesting scenery. In fact, with some minor disregard for your car, you can drive right down into the Box on a rocky road to a good turnaround and campsite within a few yards of the river. Again, don't be tempted to take your vehicle down that last pitch into the water. It is a long walk out. You won't be riding.

Today, the Hassayampa Box is a serene, inviting place just waiting for your visit. Take a lunch and friends and enjoy the utter relaxation of a fine Arizona day with water and shade and all the natural air conditioning you can ever use.

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are happening at . . .

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Telephone Death Valley Junction #1 for information or reservations.

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Murphy's could be called the "classic" of all of the California gold rush communities. Certainly it is one of the best preserved of the old Mother Lode towns.

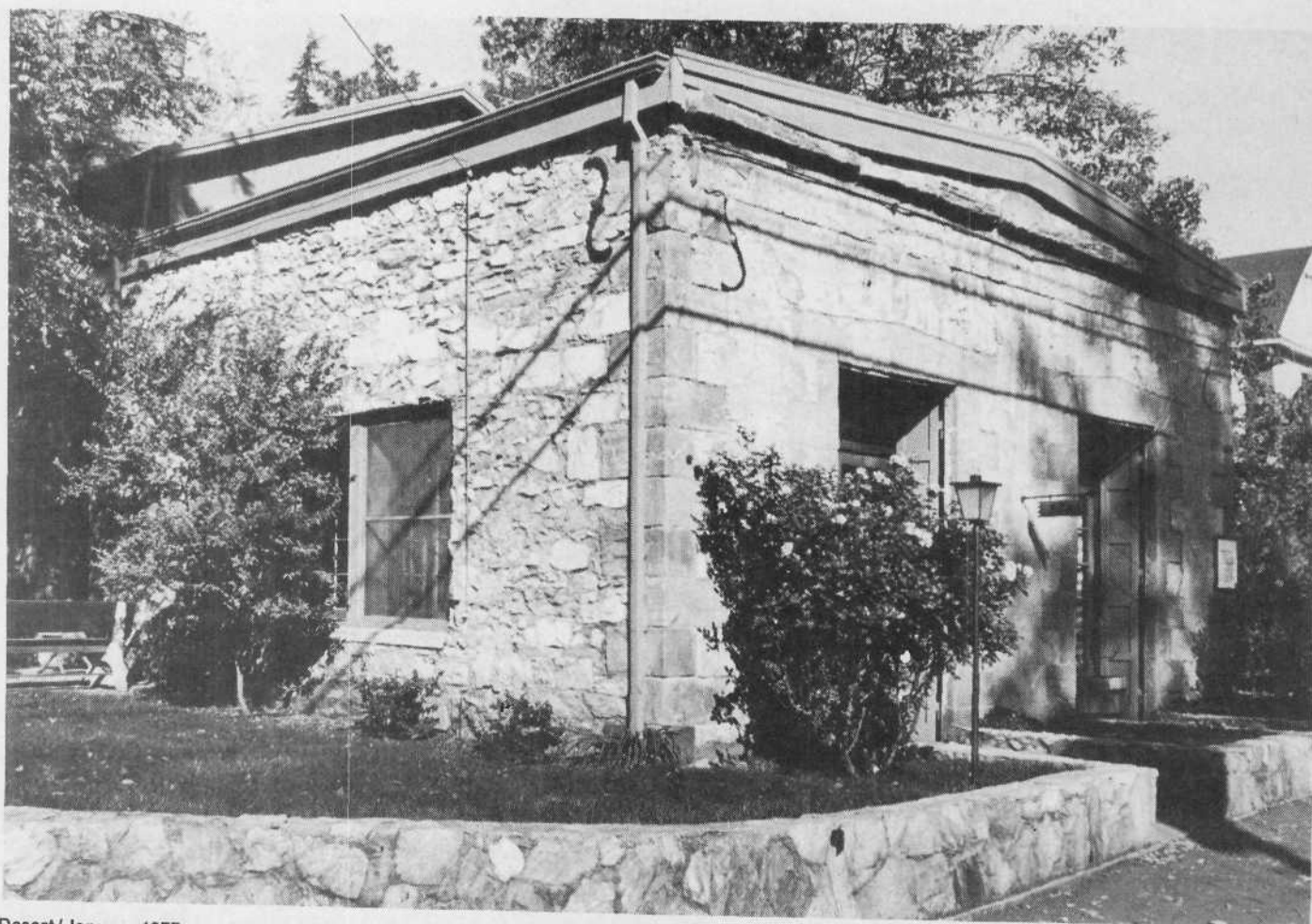
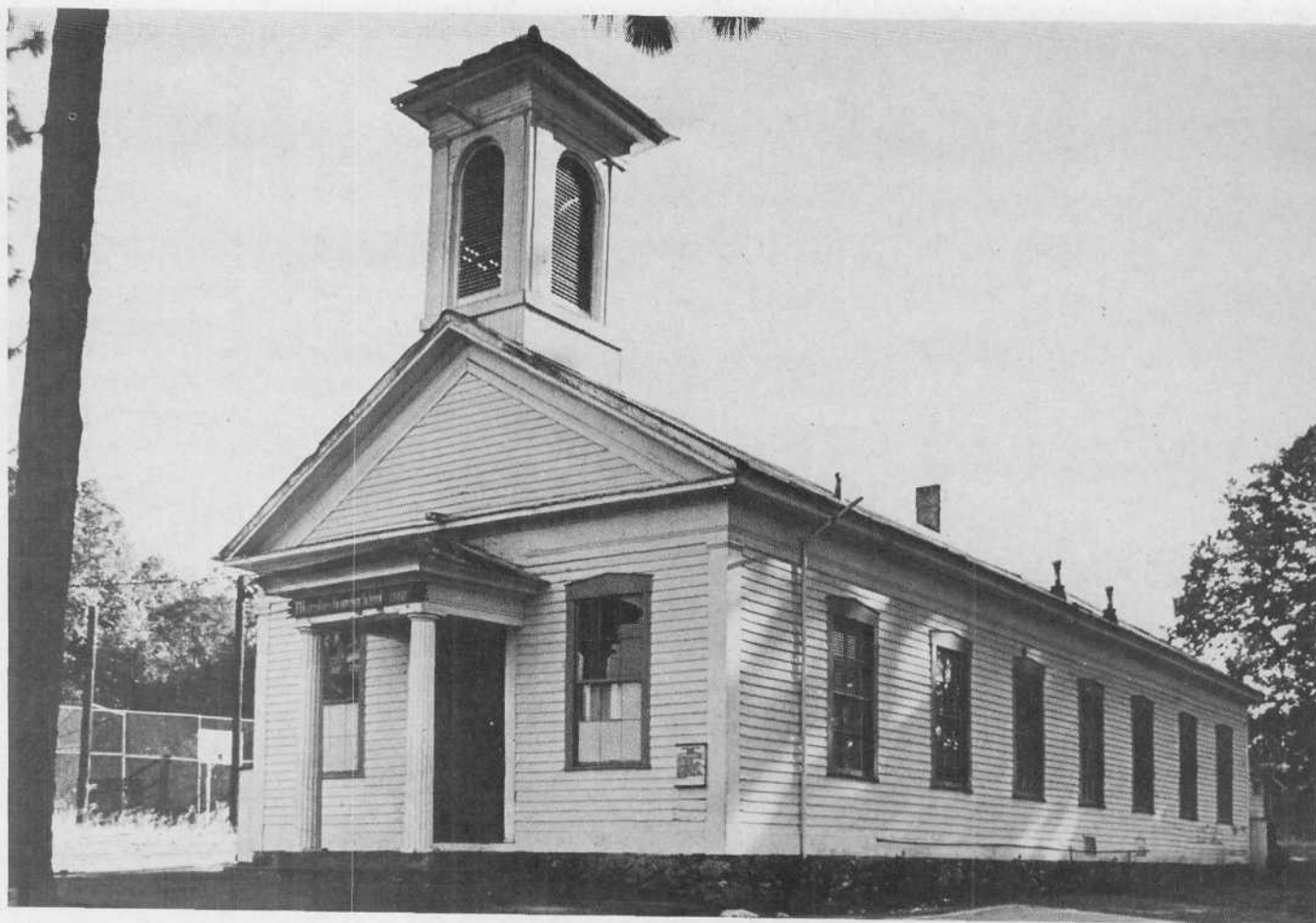
Rich placer gold first attracted Daniel and John Murphy to the valley that cradles the town bearing their name. Their arrival was in July of 1848, early in the rush to the streams and rivers of the Mother Lode. The gold from those streams, that built so many California settlements, established a substantial town of brick, wood and stone at Murphy's.

As the placer gold disappeared, the "Big Trees of Calaveras" sustained Murphy's as the gateway to that impressive grove of giant Sequoias. Many important and famous people stopped in Murphy's, in the 1800s, on their way to see what is now Calaveras Big Trees State Park. Such names as Mark Twain, Horatio Alger, J. P. Morgan and U.S. Grant can still be seen on the old register of the Murphy's Hotel.

Today, Murphy's not only retains its charm and beauty, but as a "very much alive" Mother Lode town it provides the visitor with as generous a helping of California history as can be found.

Murphy's is located on California Highway 4, nine miles northeast of Angels Camp and California Highway 49. □

Left: The First Congregational Church of Murphy's was built in 1895. It replaced a church structure built in 1853, and it is an excellent example of New England architecture transplanted to California. Upper Right: Murphy's Elementary School is the oldest continuously used elementary school building in California. It was completed in 1860. Other interesting buildings in Murphy's include the I.O.O.F. Hall and the Murphy's Hotel. Right: The Compere Building was built in the late 1850s. It is typical of many of the original stone structures still standing—and still in use—in Murphy's. Once a general merchandise store, it is now a private residence.



THE PRAIRIE

by K. L. BOYNTON

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NO MATTER what the location in the West, it seems that a prairie rattler or one of his cousins or aunts is to be found. At home in practically every kind of habitat from the flat plains to 11,000 feet up in the mountains from Canada to Mexico, this *Crotalis viridis* clan is probably the most highly adaptable branch of the rattlesnake family.

These snakes come in assorted sizes from the midgets of around two feet to big individuals over five feet. Colorwise they show local variations on the main theme of brown or black blotches on the

back with that light streak running from the eye corner to behind the jaw, which is the clan identification mark.

This prairie rattler clan is a big one with subspecies holding forth in the various sections of the Southwest and the Great Basin. They dress for the most part in shades and tones exceedingly well correlated with the environment. Take for instance *Crotalus viridis nuntius*, the Hopi rattler. He dwells in the Painted Desert and is tastefully done in appropriate reddish tones. *C.v. oregonus*, the northern pacific rattler, is quite dark, almost black, but so is the Arizona rattler, *C.v. cereberus*. Cousin *abyssus*, a little job residing in the Grand Canyon, is tinted a matching pink and yellowish-red. Dressed also in accordance with his scenery is the big Great Basin rattler, *C.v. lutosus*, whose light brownish-grey coloration blends in to the somber monotones of soil and sagebrush so characteristic of this high latitude desert region.

As everybody knows, life in the desert is no beer-and-skittles for plant or animal. Snakes, being reptiles, have the added disadvantage of being unable to maintain their own body temperature, as do mammals and birds. They are consequently at the mercy of their surroundings as their body temperatures are largely determined by that of the ground and air. With a set-up like this, there is more involved than just survival when it is too hot or too cold. A rattler's muscular activity is severely affected by cold temperature. At a body temperature of 48.2 F. he may still be able to defend himself and to crawl off slowly, but below 46.4 F. the chances are he just can't muster up enough steam.

Interesting to report, however, is the fact that the muscles that work the rattle



The Great Basin rattler (crotalis viridis lutosus), is a subspecies of the prairie rattler. Photo by Johns Harrington, Los Angeles, Calif.

RATTLER CLAN

are apparently adapted to function over a wider range in body temperature than other skeletal muscles. Zoologists L. E. Chadwick and H. Rahn, checking up on rattler sound effects, found that even at 37.4 F., the rattle can still work but that its frequency increases with the increase in body temperature up to 104 F. And, since the body temperature of a rattlesnake in the field is usually not lower than about 63 F., there is normally plenty of chance to work the old rattle efficiently.

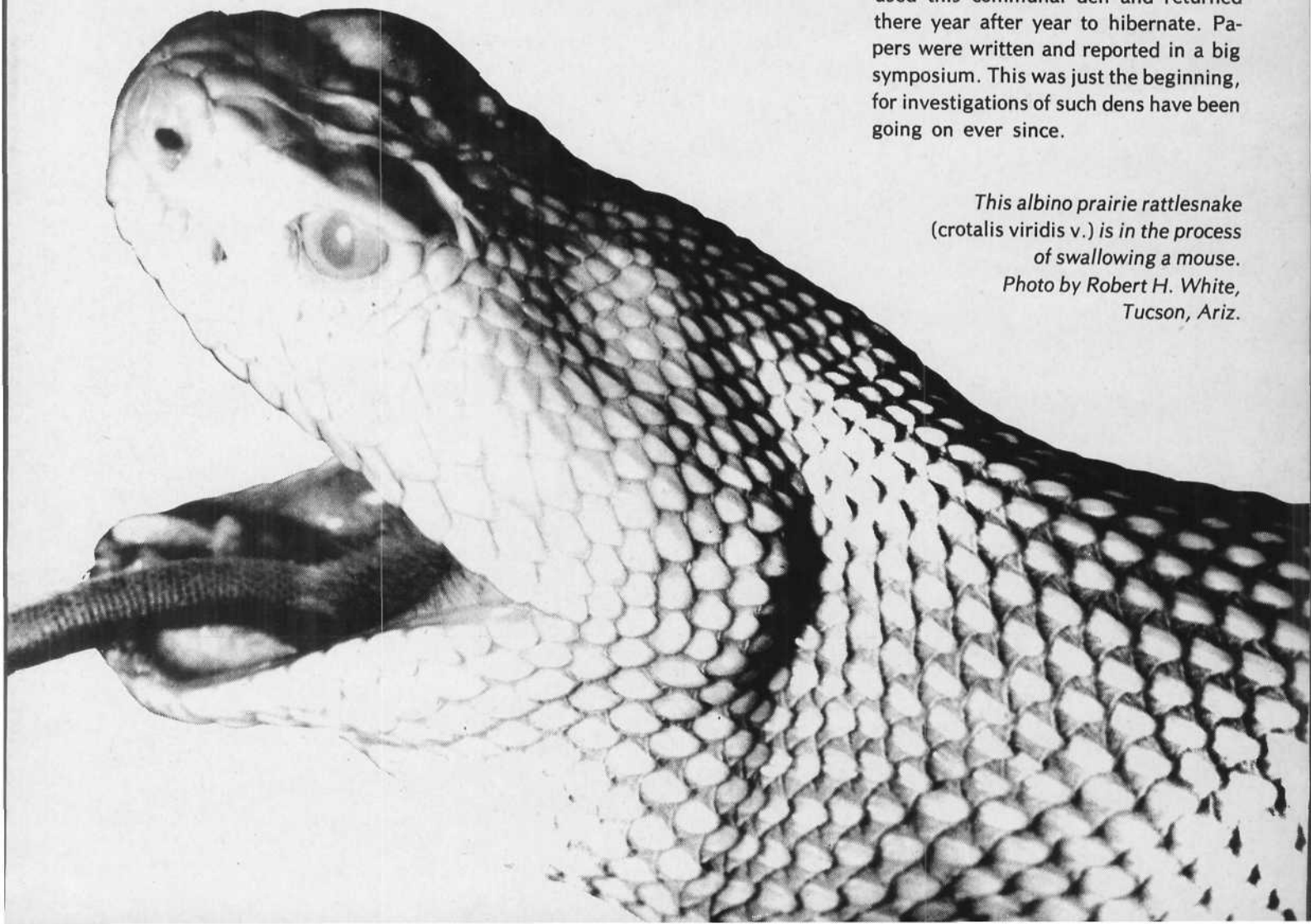
Having been around since the Pleistocene days some million years ago, rattlers have learned a thing or two that help maintain a working temperature, as biologist Lawrence Klauber points out in his monumental work on rattlesnakes.

One of these, excellent for producing a needed warm-up, is basking—lying about in the sunshine and soaking up its heat and from the warming ground and air. Digestion, which quits when the snake is too cold, gets going again with a basking warm-up. Muscular efficiency is stepped-up all over, and the snake's general alertness increased. This age-old habit of basking greatly extends the season of possible activity, for fairly cool weather at night can be endured when the sun's warmth is adequate in the day. Only when cold weather is deep and prolonged must the snakes close up shop entirely. They may then hibernate in burrows of rodents, or they may congregate in astonishing numbers in a rocky den.

One such hibernating headquarters was discovered in Tooele County, Utah, some years ago by Nathan Reiser and John Vasquez one fine sunny day in April. Quite unsuspecting they stepped onto the cobblestones of the den and found themselves surrounded by rattlesnakes, buzzers all going. The "discoverers" undoubtedly broke all world broad-jump and sprint records in departing hence, and the rattlers settled down again to their basking in the spring sunshine according to ancestral practice.

Word was immediately bruited around and biologists zeroed in to find what all this denning was about. From the work of many, particularly Angus Woodbury, some very solid facts emerged. It seems that at least six different kinds of snakes used this communal den and returned there year after year to hibernate. Papers were written and reported in a big symposium. This was just the beginning, for investigations of such dens have been going on ever since.

*This albino prairie rattlesnake (crotalis viridis v.) is in the process of swallowing a mouse.
Photo by Robert H. White,
Tucson, Ariz.*



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A snake's reason for denning is obvious enough—for such rocky places offer excellent retreats, their crevices leading down far below the surface where the winter temperatures are warmer. Here the snakes pass the cold months safely in hibernation. With the advent of warmer weather, a temperature of about 60 F. apparently stimulating them to activity as Zoologist Basil Velas' study showed, the snakes come out. They bask during the sunny hours to bring up their chilly (48 to 50 F.) body temperature. Eventually, when warm weather arrives for good, they disperse, going about their summer business.

The big number of snakes using such a den shows that they must come from all around and maybe from some distance. So the big questions have to be: Where do they all come from? How do they find a den in the fall? Where do they go when they emerge in the spring? And how do they know the way back when fall comes once more?

Zoologist Harold Hirth picked the Great Basin rattlesnake (*C.v. lutosus*, remember) from this Tooele den roll call as a candidate that might possibly answer some of the questions. He put up a wire screen at the mouth of the den and caught the snakes during their incoming trek in September and October. He marked 10 adults for identification, put them into separate bags, and carted them away to various compass and distance points from the den. Releasing them, he beetled back himself to watch for their return, if any.

Nine got back o.k.

The one that took the longest to make it from 165 feet away took 10 days, but one smart female let loose at 330 feet

was back at the wire screen only 90 minutes later. With a score such as this lady rolled up, the Great Basin rattler is obviously a very good homer. Even some of the snakes, tested more than once and released at different compass points, made it back each time.

Do the snakes come to this winter den directly from their summer locations, or by a circuitous route? Are there leaders who lay down scent trails? If so, how do the leaders know where the den is? Are there scent trails funnelling into the den from all directions? Hirth had some 11 hatchlings in his fall entrees, all of whom arrived long after the adults and juveniles had already entered. They probably followed a scent trail. Or, is something besides scent involved? Zoologist Hobert Landreth, for instance, has found that the big western diamondback, a different species of rattler, can use solar cues in orienting himself.

Hirth again on the job, this time with Robert Pendleton, Arthur King and Thomas Downard, checked up on the rattlers as they emerged from the den in the spring, hoping to find out where they went for the summer and what they did that might clue a directional relationship with the den. They marked the snakes with radioactive tags, no small job. The doughty scientists, reaching around a lead-brick wall assembled on the tail gate of the truck, worked with mirrors to attach the radioactive tag, the snake candidate being held fairly well in clamps. Then they released the snakes. Some 56 percent were recaptured at least once during the summer, located by picking up the signals, and they were mostly within 3000 to 4000 feet from the den. Apparently well adapted to desert heat, the rattlers were above ground 80 percent of the time, the body temperature of one female found coiled under a sagebrush being a comfortable 9.8 degrees lower than that of the air.

Hirth et al came to the conclusion that the snakes wandered about for the main part, apparently without a home range with which they might become familiar and hence use as a help in getting back to the den in the fall. Which, of course, they did, knowing exactly how, even if the scientists still didn't.

The social whirl, if that is what it can be called in snake affairs, gets underway in the spring. Zoologist Robert D. Alldridge wondered what actually started

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it, since the snakes were so recently in hibernation. He collected a batch of males from a den near Moriarity, New Mexico. Separating them into groups he kept them under different temperatures and light conditions. After a lot of hard work he learned: 1. Hibernating did not affect the male reproductive cycle for individuals kept active in the light but at low temperatures showed the same condition: machinery ready, but sperm manufacture not started. 2. What stimulated the production finally was not light, but temperature. A body temperature of between 71.6 and 88 F. is necessary. In the field out Moriarity way, these snakes begin sunning themselves at the den site in March, and while at that time the temperature is too low, the coming of the warmer spring days does the job. Appropriate procedures are also going on among the females, so by the time the snakes are ready to disperse to summer grounds, the social whirl can get underway. The business of communal denning makes partner-finding easier.

Female rattlers in this prairie clan generally have their first brood during the third year of life. The southern species every year thereafter, the northern a brood every two years. Rattlers are ovoviparous or live bearers, a reproductive system whereby the eggs are not laid to be incubated by sun and ground heat, but maintained in the female's body. Here again snake body temperature is so important as it must be sufficiently high for proper gestation. When the end of the period is reached (the number of days varying in reports from 153 to 172) the female crawls into a hole or rock crevice and deposits the egg capsules. These are thin-walled and membranous. Coiled inside each is a little rattler who promptly opens its way out with its "egg tooth," a very small hard point in the upper jaw.

The hatchlings may be six to 12 inches long, already equipped with fangs and venom, but with only the fetal button at the end of the tail, and hence without sound effects. Pugnacious, they vibrate their tails anyhow, and obviously mean business—very willing and very able to defend themselves. This is fortunate for they are on their own, there being no maternal care. Any young that may be found in the same refuge with a female are recent hatch-ees not yet dispersed from the birth site.

Their main job is to grow.

How successful this is depends on the food supply and the length of the growing season, the Great Basin rattlesnake youngsters not making as great gains as their southern Pacific cousins who, in the milder climate may almost double their length in the first year. Biologist F. Heyrend and A. Call found, moreover, that the growth pattern changes as the snakelets develop. A 16-inch male Great Basin rattler may increase 50 percent in a year, but by the time he reaches 25 inches, the growth may be only eight percent. Females don't do that well, the comparable sizes making only a 32 percent and three percent gain respectively.

Born in August, usually, the rattlers must somehow put on enough fat to see them through the winter hibernation, and on small prey such as insects and lizards at that, since they are so little themselves. These menu items are best captured in daytime when, alas, it is most dangerous for the inexperienced young to be out themselves. As they grow to adulthood they have the great snake tribe advantage of a big jaw gape, a stretchy gullet and expansible sides, which enables them to eat very large prey, rodents perhaps two-thirds of their own body weight. This is a very good meal, another being necessary only after 10 days to two weeks, thanks to the slower-paced snake metabolism.

Moisture needs fortunately are supplied by their prey, and the rattlers conserve water by sitting in the shade, or going into a rodent hole when the temperature is too high. Too, excretion of urine in the form of the chalky solid uric acid conserves water further, although moisture is lost in feces and of course in respiration and when they shed their skins.

Being so highly adaptable to so many different habitat conditions, and with that know-how tucked in somewhere on how to find comfortable hibernating dens, the *Crotalis viridis* will more than likely be around for a very long time. This is a good thing too, for these rattlers, although not objects of tender passion on the part of human desert goers, are still fine fellows for keeping down prey populations and helping keep environmental affairs in balance.

The study of such serpents, let it also be said, maketh many a knowing scientist the wiser, to boot.

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The ABCs of Anza-Borrego

...The world's largest desert park

by BILL JENNINGS

ANZA-BORREGO COLOSSAL, the world's largest desert park . . . the first of its type in the California state park system . . . the superlatives go on and on. ABC stands for many things unusual at this 520,000-acre wilderness paradise in southeastern California.

For one, ABC means a highly successful, highly unusual gimmick, the Anza-Borrego Committee, a citizens group attached to the Desert Protective Council which is acquiring privately owned land within the park boundaries at no cost to the taxpayers—land to be added to the park acreage.

For another, ABC stands for Anza-Borrego Cooperative, a loosely-knit coalition of state agency, conservation and off-road user groups working quietly together sometimes, but usually separately, to improve the park. Largest of these is the Anza-Borrego Natural History Association.

Primarily, though, ABC stands for Anza-Borrego Colossal, the world's largest state park in addition to being California's pioneer desert state recreational facility, established in 1933. The park encompasses portions of three counties, San Diego, Riverside and Imperial, with elevations ranging from below sea level to 6,000 feet. There are two improved campgrounds and 10 primitive areas designated for so-called "belly" camping right on up to motor homes.

Relatively old it may be, but Anza-Borrego also is among the most innovative of all California state parks. The latest evidence of this is a major wilderness

There are also 10 primitive campgrounds, most of them accessible by conventional vehicles. Most of these camps lack water and are equipped with pit toilets. Hardy "belly" campers may throw down their sleeping bags elsewhere in the park, along established road, but no ground fires are permitted anywhere in Anza-Borrego.

Some visitors approach Anza-Borrego through Coyote Canyon, the 1774-1776 route of Juan Bautista de Anza, California's first overland colonizer. The canyon bisects one of the major home ranges of the Desert Bighorn Sheep, largest naturally occurring mammal in the Colorado Desert. Because of this magnificent animal's statewide protected status and fears of a declining population, Coyote Canyon is closed to all visitors each summer. The rough Jeep road bisects the sheeps' waterhole route.

The canyon also is part of a new wilderness zone, roughly 125,000 acres, stretching from the Santa Rosa Mountains westerly to Sheep Canyon in the foothills of the rugged San Ysidro Mountains. Existing trails in this area are still open but no additional trails, particularly for motor vehicles will be established, Getty explained.

The northern extension of the park, nearly all in Riverside County, was added over the past few years in a series of land sales, from a private rancher, the late Howard Bailey of Anza, the U.S. Bureau of Land Management and other public agencies. The park, in company with the University of California, BLM,

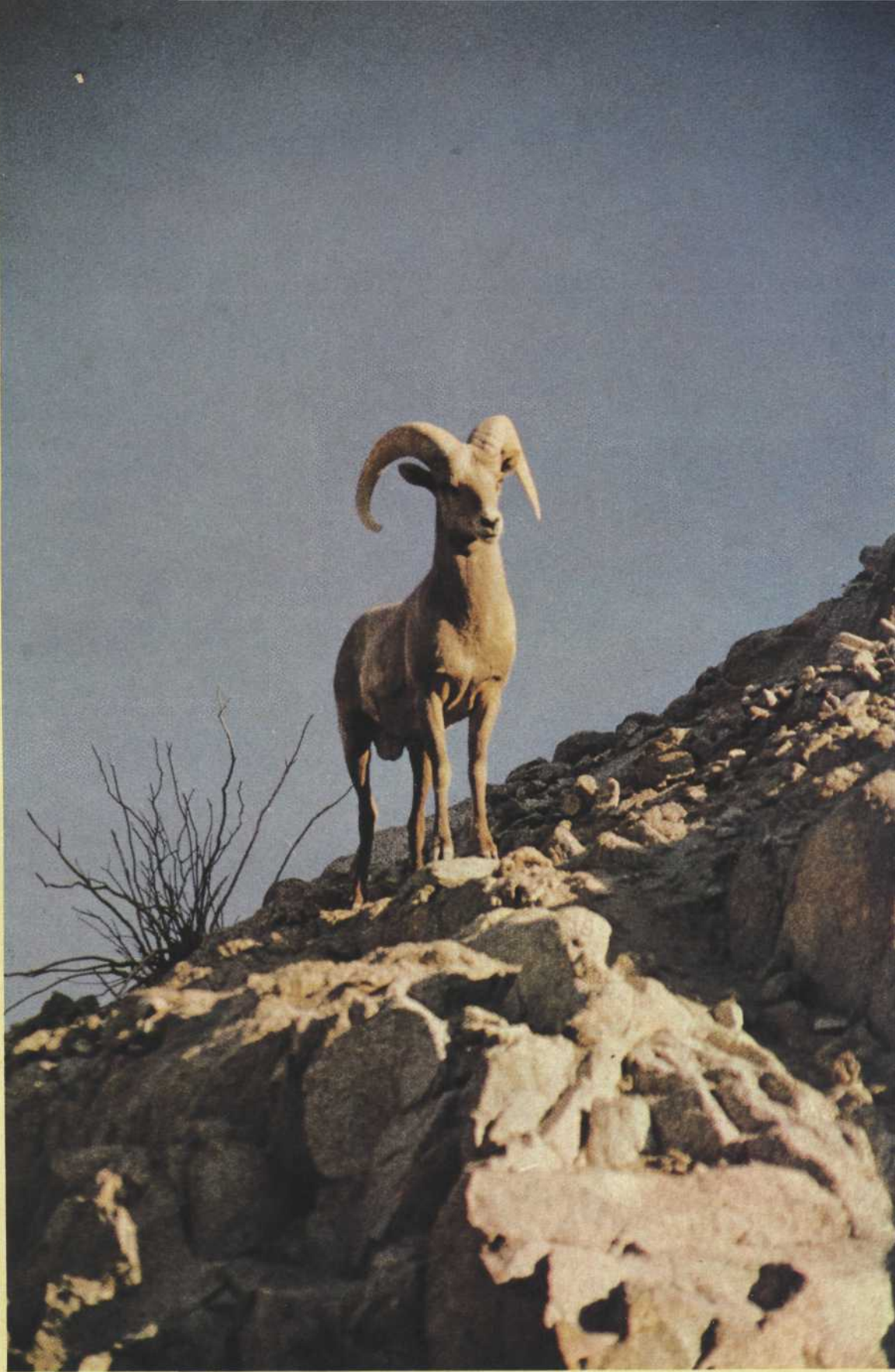
area established in the northern areas. Also, a new horseman's camp is nearing completion at historic Rancho de Anza in lower Coyote Canyon and the state's first off-road vehicular recreation area is taking shape near Ocotillo Wells along State Highway 78 at the eastern boundary of the park. Perhaps another ABC could be Anza-Borrego Changing.

The most ambitious new project, now anticipated in mid-1977, is a \$600,000 visitor's center. A state grant of \$400,000 is now being supplemented by the natural history association, with a \$200,000 fund drive just beginning. The center will be located near the park's primary campgrounds and headquarters a mile west of the little town of Borrego Springs. It will house the park's growing collection of historic and pre-Columbian Indian artifacts gathered in the park area as well as provide offices for the park staff now crammed into "temporary" quarters perhaps better suited to be a three-stall garage for compact cars. Office visitors have to thread their way through the motor pool and the back yard of Park Manager Maurice (Bud) Getty in order to pick up a map or inquire about road conditions.

Most first-time park visitors sample one of Anza-Borrego's two principal campgrounds, Borrego Palm Canyon and Tamarisk Grove. There are 52 trailer spaces at Palm Canyon and 25 at Tamarisk. Reservations are recommended during the fall to spring season at these two sites. Tap water and shade ramadas are available.

The majestic Bighorn sheep are at home in the Anza-Borrego highlands.

This ram was photographed by George Service of Palm Desert, California.

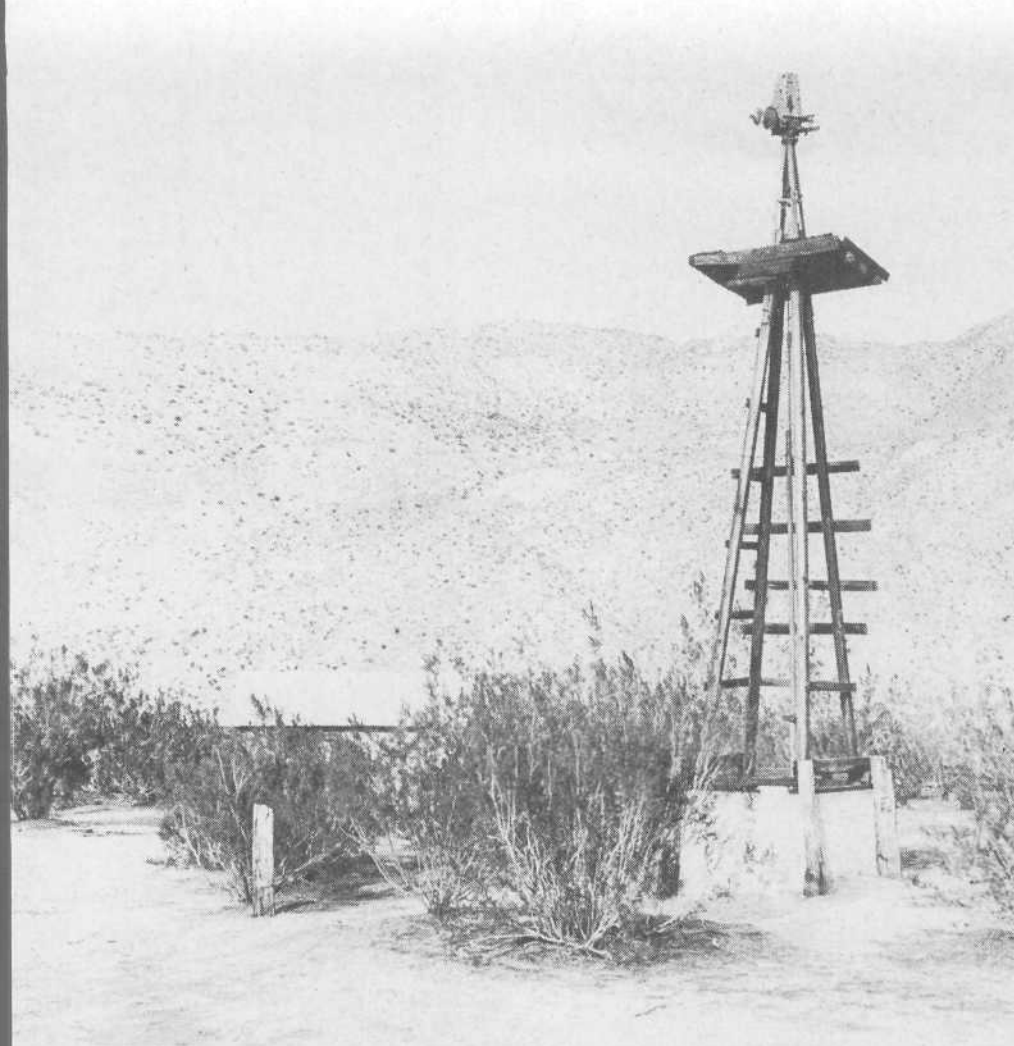


the Forest Service and Riverside County parks department, now has a lock on the vast Santa Rosa Mountains bighorn range. These agencies, combined with the Santa Rosa Indian Reservation, assure conservationists that the endan-

gered bighorns will be protected from poaching and encroaching land developments.

Anza-Borrego Cooperation is readily apparent in the common cause among these groups and the California Depart-

ment of Fish and Game, responsible for the sheep's safety under an 1873 law that made the majestic animals the first fully protected wildlife species in the state. Nature Conservancy, an international conservation group, has assisted



This view [above] of Howard Bailey's former cattle line camp in upper Coyote Canyon of Anza-Borrego Desert State Park shows the diversity of the huge recreational and historical reserve. Area was recently added to the park by the Anza cattleman's sale at less than half the appraisal price for more than 6,000 acres of canyon and mountain land. Below: Santa Catarina Springs, one of the campsites for the first Anza exploration expedition from Sonora to California. The site in lower Coyote Canyon, or Collins Valley, overlooks the Lower Willows, one of the largest springs in the Colorado Desert.



fish and game and park agents with land purchases in the sheep ranges. To date, more than 100,000 acres of bighorn habitat are included in the state game refuge or otherwise protected private development.

All animal and plant species are protected in the state park by law, but enforcement is a cooperative venture among park personnel and their much more numerous guests. Getty figures conservation is ahead so far, and is quick to praise off-road vehicle users as well as the more orthodox preservationist groups.

Off-road clubs have contributed several thousand man hours in the past year to reopen vital back country roads, camping and other recreational facilities and, most particularly, the famous Ghost Mountain home of the late Marshal South and his family in the southern park of the park.

Yaquitepec, as the adobe and stone retreat is known, has been preserved by members of the Orange County Chapter of Associated Blazers of California. A story detailing the restoration will be forthcoming in a future issue of *Desert*.

Members of a San Diego and Ocotillo Wells-based off-road vehicle club—Los Pretots—spent a weekend after last September's hurricane storms repairing the route through Split Mountain into the Fish Creek district of the park. The route is used by many conventional cars and therefore their volunteer efforts could not be considered self-serving.

"Members (of the club) did not need to do this to get through," noted Paul Scheussler, park ranger patrol supervisor. "They could drive around it in their vehicles. They worked to open it for the public in passenger cars."

Anza-Borrego Cooperation. A new off-road vehicle area, soon to cover 14,000 acres, is being prepared in the area north and east of Ocotillo Wells. Its prosaic official name is the Ocotillo Wells State Recreational Vehicle Area. Advocates are already calling it the Windy Morton Off-Road Area to recall the late Walter Windy Morton, pioneering Ocotillo Wells off-road park developer and rescue aid to hundreds of stranded motorists, including the writer of this story. The new area is a first for California state parks.

Anza-Borrego was established in 1933 and originally included only federal and

Architect's drawing of the new Visitor's Center to be built at a cost of \$600,000. It will house the Park's collection of historic and pre-Columbian Indian artifacts.

state-owned lands north of State Highway 78. The Anza section, all south of Highway 78, was added in 1941 and separately designated until after World War II.

Getty alone among present park personnel comes close to spanning the diverse history of the 43-year-old park. He was originally assigned as a ranger in 1959, returned as naturalist in 1965 and became manager in 1972. His philosophy of administration is simple:

"I believe parks are forever, with people's help," he told an interviewer shortly after returning as park ranger in July, 1972.

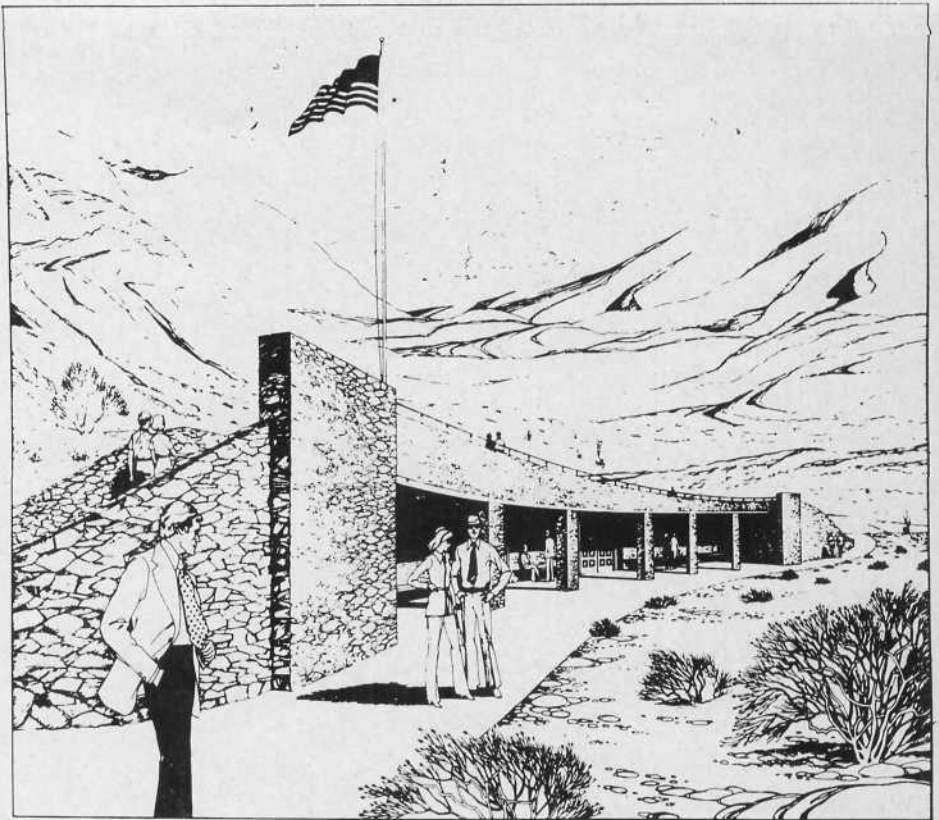
Parks are forever, and Anza-Borrego reflects that philosophy by constant growth, in size and diversity.

Apparently many visitors agreed. The all-time attendance mark, set from July 1, 1972, to June 30, 1973, was 1,123,262 persons. One major reason had been an outstanding wildflower season in the spring of 1973.

Another reason for continuing heavy attendance is the incredible diversity of the park. It is home to more than 300 species of animal life, exclusive of insects. Plant varieties number more than 500. More life forms are being discovered each year.

The park is a giant research laboratory for many types of scientists, including several who live in or near the park. Perhaps the best known of these is George Miller of Canebrake who conducts classes in paleontology and geology at Borrego Springs and also teaches at Imperial Valley College.

Since 1964 more than 300 ecological and geological areas have been recognized and included in the registry of national natural landmarks. Anza-Borrego made the list early in 1975 and three of



its trails, used since 1772, have been placed on the National Register of Historic Places. Oldest of these, used by Lieutenant Pedro Fages in 1772, enters the park from the Cuyamaca Mountains to the west. The second, through Coyote Canyon, was the Anza exploration route used originally in 1774.

The most famous is the Southern Emigrant Trail, one of the major access routes to the California gold fields in

1849. It also was a military trail before and during the Civil War and the Apache campaign of Arizona until the late 1870s.

Old trails, abundant resources recognized nationally may be a matter of prestige for the park, but the average visitor is more concerned that Anza-Borrego year-round camping and sightseeing potential unmatched in any other state park of Southern California.

Anza-Borrego Colossal indeed! □

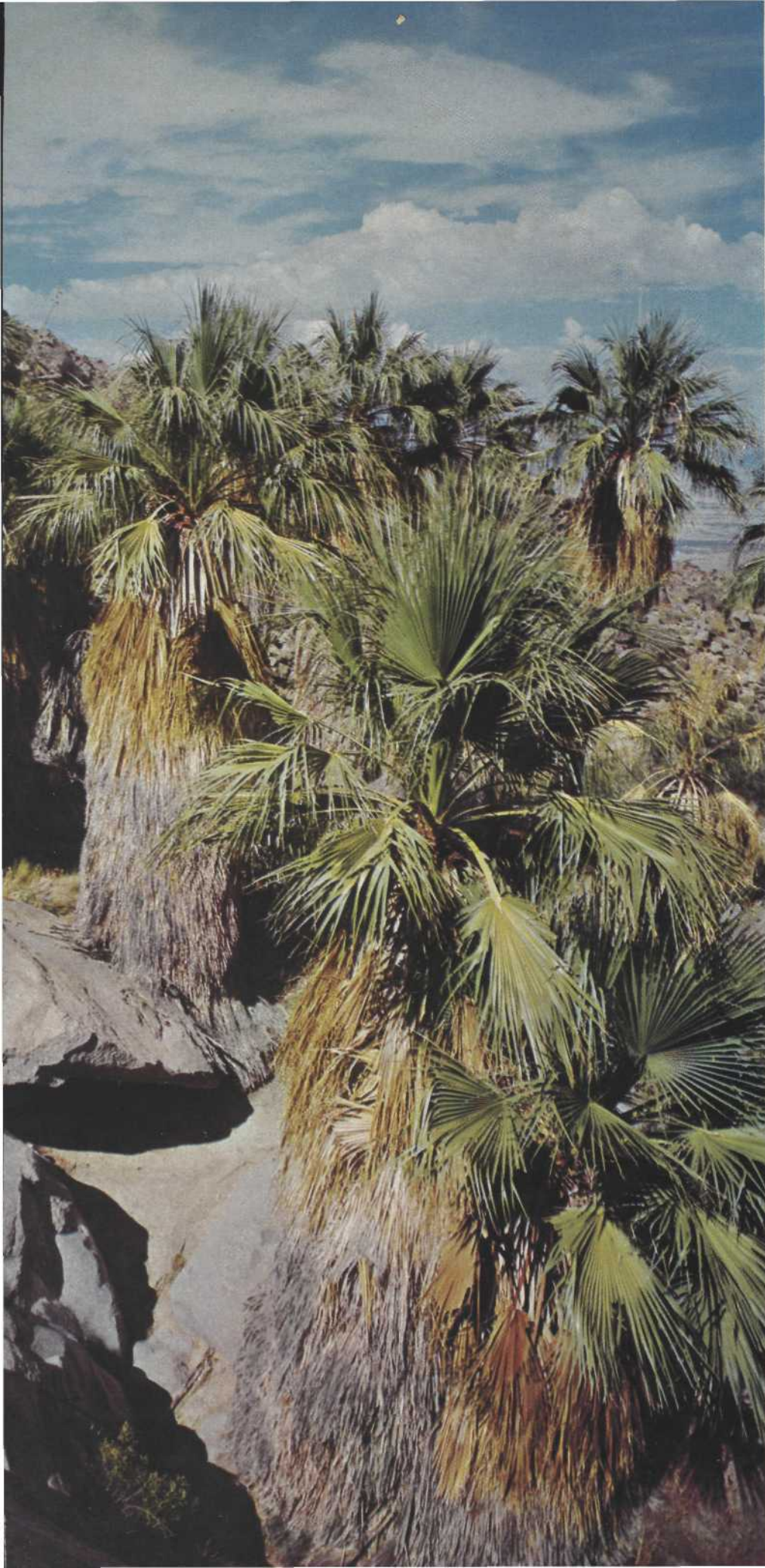
El Vado, the ford, is one of several historic sites in Anza-Borrego Desert State Park marked by a bronze plaque, ironically, seldom seen by park visitors because access is restricted by private land.



Palm Oases of the California Deserts

by DICK BLOOMQUIST





*Grapevine Canyon is typical of the quiet beauty to be found in remote desert canyons.
Photo by
George Service,
Palm Desert,
California.*

THROUGH THE pages of this magazine we shall be taking a journey, a journey to many a hidden desert place where birdsong and the rustling of the wind punctuate a deep silence. Sunshot canyons, sandy washes, and rough-hewn hills and mountains will be our companions along the trail. We shall be roaming the Colorado Desert of southeastern California and, on three sorties, the more northerly Mojave.

Our goal will be the oases of wild palms which, for the most part, lie ensconced in remote washes and canyons along the borderlands of the Coachella Valley, the Salton Sea and the Anza-Borrego country. Seeps, springs, and even running streams will enliven many of these oases. Wildflowers and wildlife, blue skies, history, prehistory, legend, and the lure of far horizons will work their magic, too. And now, while the storms of winter break over much of the land, come with me on this leisurely journey into the warmth of the peaceful desert.

More than two thousand species of palms are found on this planet, every continent except Antarctica supporting native stands. Palms grow wild in Brazil, Argentina, Mexico, the United States, Italy, Greece, Africa, India, Malaysia, China, Korea, Japan, Australia, New Zealand, the South Sea region, and many other lands. Palm fossils have been recovered from Cretaceous rocks 120,000,000 years old. Most palms favor tropical or subtropical climates, but some, including our lone California desert species, can survive freezing temperatures. On the Atlantic seaboard of the United States, palms extend into North Carolina; in the Pacific states they reach their farthest north in California's Mojave Desert.

Usually, when palms are mentioned, we think of faraway places steeped in romance—of Hawaiian black sand beaches or timeless Saharan oases. But the American West also has its own groves of native palms, each with its special aura and allure. Only one species is

found in these oases of the desert Southwest. Botanists know it as the California fan palm, (*Washingtonia filifera*). (There are two species in the genus *Washingtonia*, but the other, *W. robusta*, the Mexican fan palm, grows only in northwestern Mexico; it is taller and more slender than *W. filifera*.) "Fan" refers to the shape of the leaves, *Washingtonia* honors George Washington, and *filifera* ("thread-bearing") describes the leaf edges. Hermann Wendland, the German horticulturist, gave the species its botanical name in 1879.

The fan palm ranges over portions of the Colorado Desert of southeastern California, the extreme southern Mojave Desert in California, northern Baja California (Mexico), and western Arizona, where several small groups thrive in and near Palm Canyon on the west side of Yuma County's Kofa Mountains. It has, in addition, been widely planted as an ornamental throughout the subtropical regions of the world.


Over 100 palm groups (the total

number is probably between 110 and 120) containing 12,000 to 13,000 *Washingtonias* have been discovered in the California deserts. The great majority of these oases are located along the western edge of the Colorado Desert from the Coachella Valley to the Mexican line. Within this area the desert slopes of the San Jacinto and Santa Rosa ranges near Palm Springs and Palm Desert, together with the Indio Hills to the northeast, hold the heaviest concentrations. The ranges running southward from this region into Mexico also harbor sizeable palm populations, and a few other groups may be seen in the southern Mojave Desert, the Chuckawalla and Eagle Mountains, and near the Salton Sea.

Most of the oases lie hidden away in rocky mountain canyons; some favor sandy arroyos in hills or badlands; only rarely does a grove—such as Twentynine Palms in Joshua Tree National Monument—stand exposed amid flat, open surroundings. Sometimes, as in Murray Canyon near Palm Springs, hundreds of trees extend for a considerable distance along a watercourse. More commonly, however, an oasis consists of a relatively small number of palms gathered together in a close-set group in which the irregular spacing and unequal heights of the trees combine to create a most pleasing picture.

All the native groves in California lie within 30 miles of the former beach line of Lake Cahuilla, which dried up completely five centuries ago. Born about 900 A.D. on one of several occasions when the Colorado River flooded and shifted its course, this fresh-water sea once stretched from the Coachella Valley into Mexico. Palms may have grown along its 250-mile shore line. The saline Salton Sea, created by the flooding Colorado in 1905-07 and kept full by irrigation drainage, today occupies a small portion of the ancient lake bed.

The most westerly stand of native *Washingtonias* in California is along Snow Creek near Palm Springs; Andreas and Murray canyons, also near Palm Springs, are the westernmost groups to be described in this series of articles. The most northerly native grove is Twentynine Palms in Joshua Tree National Monument; the most easterly, Corn Spring in the Chuckawalla Mountains; and the most southerly, Pinto Canyon just above the Mexican border in



Fan palms frequently grow with their feet in the water. This group shows a full-skirted beauty on the right and a fire-ravaged trunk still alive on the left.

southwestern Imperial County; nearby Juniper Spring is the southernmost oasis treated here.

Palm Canyon near Palm Springs reigns supreme in number of trees, with over 3,000. Several locales, each with a single *Washingtonia*, share the title of smallest oasis; the ones we shall visit are Lone Palm and Una Palma, both in the Borrego Badlands. At some 200 feet below sea level, Lone Palm also ranks as the lowest oasis to be featured in this series. Although Dos Palmas, at an elevation of just under 3520 feet in the Santa Rosa Mountains, is commonly ranked as the loftiest oasis, this title is in reality held—to the best of my knowledge—by Single Palm Spring in Joshua Tree National Monument. Growing at 3550 feet near Fortynine Palms, this lone *Washingtonia* probably stands on higher ground than any of the other 12,000 to 13,000 trees of its kind in the California deserts.

Our present-day oases may be a residue from earlier times when a wetter, more tropical climate moistened southeastern California and adjacent regions. Even today the desert palm grows with its head in sunshine, its feet in water, that is, it must have moisture on or very close to the surface of the ground to survive. The species tolerates alkali very well, often thriving on water too brackish for human use.

The graceful *Washingtonia* varies in height from 20 to 70 feet. Ducts carrying water and nutrients are scattered throughout the unbranched, flexible trunk, which ranges from one to three feet in diameter. The fibrous trunk contains no growing layer (cambium) and therefore reveals no annual rings; growth takes place in the uppermost part, in a terminal bud or "cabbage" hidden in the center of the crown. Because of the absence of annual rings, it is impossible to determine a fan palm's exact age, but some veteran trees are estimated to be at least 200 years old. Fallen trunks often exhibit large holes marking the places where adult palm borer beetles (*Dinapate Wrightii*) have emerged.

The large, much-divided, fan-shaped leaves are borne on three-to-six-foot-long leaf stalks studded with hooked spines. The living leaves crown the tree with sparkling green, and the drooping dead ones fashion the ground-length

This lone palm in Anza-Borrego shows a cluster of fruit hanging from the crown and is a good example of erosion exposing its root system.



brown "skirts" which distinguish *Washingtonia* from almost all other palm genera. These dead leaves were used by the Indians as thatching for their huts. Often lightning fires or vandals burn away the skirts, leaving the trunk blackened and bare, but usually not killing the tree. Years ago the Indians fired the palms, too, hoping to thereby increase the supply of edible berries. The lack of cambium and the scattered arrangement of the conducting tissues mentioned above give the palm excellent resistance to fire. Killing the terminal "cabbage," however, results in the death of the tree.

The fan palm blooms in late spring, bearing long panicles of small whitish blossoms. Each flower contains both male and female parts. The fruit, which hangs in clusters from the tree crown in summer and early fall, is a blackish berry with thin sweet flesh around a very hard brown seed about the size of a pea. The Indians ate the outer pulp and the seed, grinding the latter into meal. Coyotes, which eat the fruit after it falls in autumn and later void the undigested

seeds elsewhere, have probably been instrumental in enlarging the range of this magnificent desert tree.

Below ground level the fan palm sends out a dense but shallow mass of fibrous roots, each rootlet generally no more than ¼-inch thick. Erosion sometimes exposes a portion of this root system.

Now that the object of our quest has been introduced, we are ready to begin our search for the palm oases of the California deserts. Of the 100-odd stands of *Washingtonias* in the state's Colorado and Mojave deserts, we'll be visiting 40 of the most attractive and intriguing groups. We'll use passenger car, pickup truck, and four-wheel-drive to approach, and in some cases to reach, the groves, but mainly we'll be exploring afoot. Our trail will take us from the Coachella Valley to the southern Mojave, then into the Chuckawalla and Eagle ranges, around the northern end of the Salton Sea, and through the Anza-Borrego country to the Mexican line.

The desert is waiting. We'll get underway next month. □

Breyfogle and the Big Smoky Valley

by HAROLD O. WEIGHT

WHERE IS Breyfogle's lost ledge? With Breyfogle and his gold in the very bone and marrow of Death Valley history and legend, there would seem only one answer. In Death Valley, of course! Probably in the Funeral Range—but at least in the Death Valley country. That's where Charles Breyfogle always looked for it, and that's where dozens of Lost Breyfogle versions place it.

Only a number of old Nevadans, who knew mining and the country, never agree. Those who believed Breyfogle really found and lost a golden ledge told me it must be at Round Mountain, about half way up in the Big Smoky Valley and 200 miles north of the Funerals. Those who claimed the "lost mine" was really

only a few rich samples Breyfogle used to promote grubstakes were certain those samples came from Birch Creek Canyon, behind the town of Geneva—also in Big Smoky Valley.

The Big Smoky, named by John C. Fremont when he traveled down through it on his 1845 expedition, lies largely between the Toiyabe Mountains, roughly

The Big Smoky, named by John C. Fremont when he traveled down through it on his 1845 expedition, lies largely between the Toiyabe Mountains on the west and the Toquimas on the east. It runs about 140 miles, roughly north and south, from a point easterly across the Toiyabes from Austin to a point westerly from Tonopah. Birch Creek Canyon is in the Toiyabes' northern end.

Ranches were established in the Big Smoky in 1863, as a result of the Reese River silver rush. The old Overland Road crossed it a few miles north of Geneva, and during the '60s the valley was a natural highway south to Silver Peak and the Death Valley country—the route early Breyfogle parties followed.

For more than a century there have been mining excitements and mining operations all up and down the Big Smoky. Round Mountain, discovered—or rediscovered if it is the Breyfogle—in 1906, has produced gold almost every year since, \$8,000,000 before 1940. Huge-scale placer operations are under way there today.

I first was introduced to Round Mountain as a possible Lost Breyfogle by Gene



Old mill and buildings on Round Mountain's southwestern slope, where rich surface ores originally were discovered.

Gold placer
operations continue
today on an
enormous scale
at Round Mountain.
[Note size of
trucks in pit.]



and Leo Grutt in the ghost town of Rawhide, Nevada, in 1946.

"They picked Breyfogle up in Big Smoky Valley, just beyond Round Mountain," Gene said. "He was starved, thirsty and battered up. And in his hand he had a bandana loaded with gold ore. It isn't common sense he would have held onto that ore through hundreds of miles of wandering. Why, the bandana would have been worn out!"

Leo agreed: "No man would have carried the ore that far. He'd just passed Round Mountain, or maybe over the shoulder of it. And the gold was right there, right on the surface. The sun was right and it glittered in his eyes. So he picked it up."

A new Breyfogle theory! I was soon on my way to investigate Breyfogle's connections with Big Smoky Valley. My preliminary prospecting was done in the Recorder's office in Lander County courthouse in Austin. Files of the Reese River *Reveille* were there, as well as the region's earliest legal records.

A few writers about the lost ledge gave Breyfogle's first name as John, James, Louis or Herman. But most said it was Jacob. J. Frank Dobie described Jacob as an enormous-footed, strikingly bow-legged giant "very near the brute, both physically and mentally." Searching the *Reveille* files from the beginning

in May 1863, I found no Jacob Breyfogle.

But there was a C. C. Breyfogle, and he was hunting a lost ledge. Those initials were familiar to Bert Acree, Austin native and Lander County Recorder since 1909, so we started through the old record books.

C. C. Breyfogle had been active in mining in the Big Smoky Valley in the 1860s, and in promoting the town of Geneva there.

Each time I have written about the Breyfogle, the story has differed to some extent through such research and help from officials like Bert, from Nevada pioneers, Breyfogle family members, the Nevada State Historical Society, Nevada and California state libraries, miners, prospectors and lost mine hunters.

This is my version as of 1976. Charles C. Breyfogle, far from being "near the brute," was a Fortyniner and a California and Nevada pioneer of intelligence and ability. Starting across the plains with Brother Joshua D. in April 1849, he arrived in Sacramento in August, 1849.

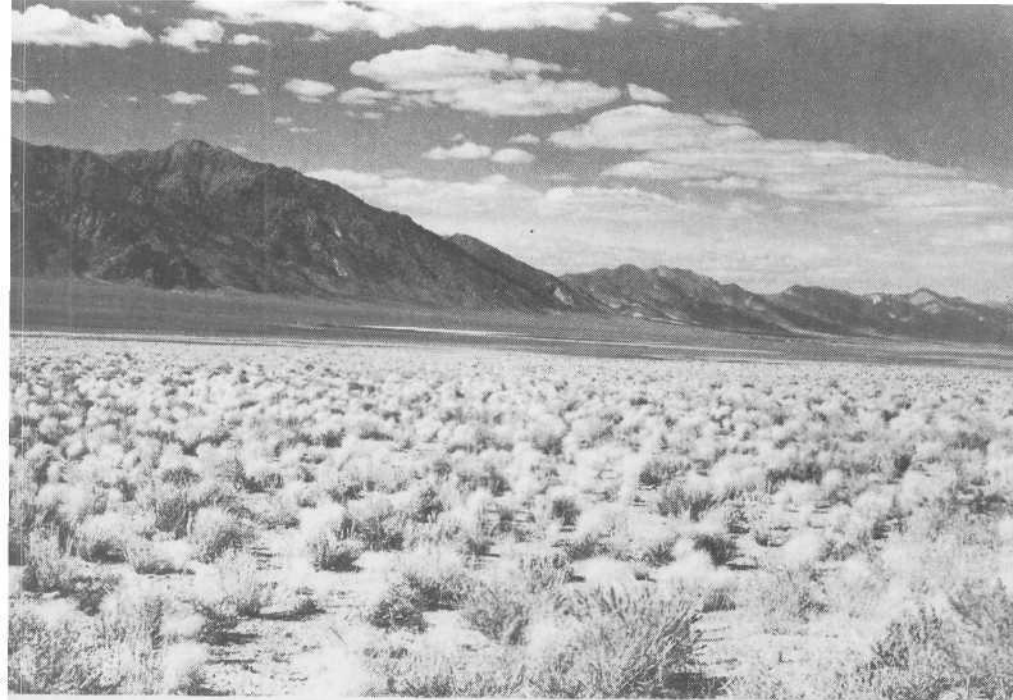
A younger brother and four Breyfogle cousins also were in Gold Rush, California, the other brother arriving to hunt gold in 1852. His name was Jacob. He was a blacksmith, which often is given as the profession of the Breyfogle who lost the ledge. Quite possibly he ended up hunting Brother Charles' lost gold, and

thoroughly tangling up the Breyfogle legend.

In December 1850, at the forks of the Yuba, Charles left Joshua (and gold mining) to farm with a brother-in-law at San Jose. October 1854, he was elected Assessor of Alameda County, and was re-elected in 1855 and 1856. In September 1857 he was elected County Treasurer. He seemed well on the way to political importance when, in August 1859, a shortage of \$6500 was discovered in his accounts. He resigned, was tried, and went to prison.

When Leland Stanford became Governor of California in 1862, according to a story attributed directly to him, a delegation asked a pardon for Breyfogle. Another person in the office had taken the money, they said. Breyfogle was guilty only of careless management. The delegation included a majority of the jury involved, and the judge and prosecuting attorney. The pardon was granted.

This scandal and setback must have been the prime reason for Breyfogle's move to Nevada. He was not in Nevada's first directory, dated 1862, but neither was Austin. He was in the second, 1863: C. C. Breyfogle, resident of Austin, address Main Street; occupation, miner. Lander County records reveal many mining and real estate transactions by Breyfogle. As early as February 9, 1863,



he sold 200 feet in the Pacific Ledge for \$500, which certainly makes him a Reese River pioneer.

June 20, 1863, Breyfogle sold 30 feet on the Everett Ledge at Geneva for \$500. Geneva, at the edge of the Big Smoky some 12 miles southeast across the Toi-

yabe Mountains from Austin, was a product of the Reese River boom. It may have reached a peak population of 500. Thompson & West's *History of Nevada*, published in 1881, called it a "city of great expectations," and explained what happened to the expectations:

"In the hills enclosing Birch Creek were some large and apparently rich veins of quartz, some of which were sold to New York capitalists, who expended large sums of money in their development, but with unsatisfactory results.

"Geneva, in 1864, had some fine stone buildings and numerous log and cloth houses, but the inhabitants long ago folded what tents they could, and the stone walls, the pretty vale, and the sparkling stream are left in their wilderness."

So they remain today, although some of the stone walls are becoming pretty difficult to locate.

One of those fine stone buildings was a 30x50 foot hotel, "now under the charge of Mr. Breyfogle," the *Reveille* reported July 29, 1863, "who will spare no pains to render his patrons comfortable and their stay in Smoky Valley pleasant." Breyfogle also had a new 17x20 stone residence in Geneva, and mining and real estate interests. On the town plat, dated December 1863, Breyfogle was listed as one of Geneva's seven proprietors.

So here we find Charles C. Breyfogle, a leading citizen of Geneva, apparently well settled in a second career and nearing old age by the standards of those times. (The Breyfogle genealogy gives his birthdate as 1808.) Less than two years later he was on his way to a sort of immortality as the "touched" lost mine hunter, involved in a fanatic search that would last the rest of his life—and almost end it more than once.

What happened and why? Breyfogle must have realized that in Geneva he had picked a loser. Did he sell out successfully and leave, or did he leave because he could not sell? Was the Lost Breyfogle the cause or result of his leaving?

Some of the Breyfogle legends say his original discovery was made in 1862, on his first journey to the Reese River Diggings. I do not agree, and have found no contemporary mention of the ledge before 1865. Why would he have waited so long to try to relocate it? Some say his first expedition from Nevada to Death Valley was in search of the Lost Gunsight silver of the Death Valley Fortyniners. Since he must have heard the story in San Jose, this is possible.

At any rate, the January 30, 1864 *Reveille* reported that Breyfogle and four



Above: Nevada's Big Smoky Valley, looking up the valley from near Round Mountain. This is the area where Breyfogle is supposed to have been found, after his escape from Death Valley. Left: Edward A. Michal, long-time Round Mountain mill foreman, points out Los Gazabos vein on Round Mountain's southwestern slope, where Breyfogle may have found his gold. Photo taken in 1946.

men had passed San Antonio, a new mining district near the southern end of the Big Smoky Valley, "professing their intention to go as far south as the Colorado River on a prospecting tour." The next month a *Reveille* correspondent mentioned new people, a Mr. and Mrs. Ransom, in charge of the Geneva hotel.

Return of "some" of this party of five, not mentioning Breyfogle, was reported in the *Reveille* that March. They had traveled south to the Los Angeles-Salt Lake road, "suffering innumerable hardships," followed it to Los Angeles, and returned via San Francisco.

Breyfogle did return to Geneva after that trip, and must have intended to spend some time there, as on May 14, 1864, he was elected president of the Smoky Valley Mining District. But if he did not return with the others, and if he prospected his way back with new companions, we may have come to the time and circumstances of the lost ledge discovery. A version of this discovery in which I place considerable credence, except its dating to the beginning of the Reese River rush, was told to me by Carl Stoddard in Reno in 1946. Stoddard was a capable and respected mining engineer, and his story came directly from Jacob Gooding, who knew Breyfogle and hunted the lost ledge with him. Roughly, this is what Carl told me:

"When Gooding moved down from Austin, he bought some land from my father. He used to come over almost every night. I was going to the School of Mines, so I would get him talking about mining and the desert.

"Time and again the talk would get around to the Lost Breyfogle. Time and again I would get him to describe the Breyfogle ore. Gooding was an assayer, so his description should be good. It was reddish—very reddish—and apparently impregnated with iron oxide. It was not quartz, but was silicified. What you might call porphyry. The gold was very yellow. The ore was like"

Stoddard hesitated, seeking a comparison.

"Like the oxidized ore at Round Mountain?" I asked.

One of the mines "of great expectations" in Birch Creek Canyon. Some Nevadans believe Breyfogle obtained rich specimens at Birch Creek and used them, with his lost ledge story, to obtain grubstakes. 1960 photo.

He looked surprised. "Yes, it was.

"Gooding and Breyfogle were Pennsylvania Dutchmen," he continued. "When Breyfogle got to Austin with his gold, he looked Gooding up. Gooding was one of the organizers, if not the organizer, of the first hunt for the ledge.

"Breyfogle told Gooding his story. When news of the Reese River silver strike came to him in Los Angeles, he and two companions left via San Bernardino. They knew that if they held to a due north direction, they would come to Austin. They continued an uneventful trip until they reached the neighborhood of Death Valley. There they were attacked at night by Indians. Breyfogle's companions were killed, and he escaped with only his shoes. From then on he used the shoes to carry such water as he could find. He reached a place at the lower end of Death Valley known as Coyote Holes, filled his shoes with water and went on. It was very hot and he was in pretty bad shape.

"After he left the Holes, he saw what he thought was a spring on the hillside. Always in need of water, he climbed to the spot, only to find it was a mesquite tree. Terribly disappointed, he went back to the valley. On the way he came across a spot of reddish earth on a hill. In that spot he found the pieces of fabulous ore. He was a prospector, and he knew what he had found.

"Breyfogle went on, living on bunch grass—which is succulent down toward the roots—and such water as he could find. He traveled largely by night and by

the stars, and held steadily to his northern course. He came to Baxter Springs. (in the southernmost tip of the Toquima Mountains) and stayed there several days. Then he went on and was picked up, with the rich ore, by a rancher in the Big Smoky Valley and taken on into Austin.

"The expedition formed to find the ore went back to Coyote Holes to start the search. Breyfogle thought he could pick up his trail there. But he could never get himself located. Gooding said he was continually talking about and looking for the red spot on the hill. The expedition failed."

Geneva, still not through with Breyfogle, must have learned about his lost ledge at this period—to its sorrow. In October 1865, William McBroom and C. C. Sears were killed in Death Valley by Indians, and A. A. Simonds was wounded. They were hunting the Breyfogle, and McBroom and Simonds were residents of Geneva and listed with Breyfogle on that 1863 town plat. In all, including Breyfogle, five of those seven co-proprietors of Geneva went hunting the lost ledge, or hunting for friends who hunted for it. Expeditions from Austin also went breyfogling during that and following years. And most of them—going and coming—went right past golden Round Mountain, which would not be located and mined for another 40 years.

When I went to Round Mountain in 1946, I thought the question of whether it was the Breyfogle could be decided by

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Silver Lake Country

by MARY FRANCES STRONG

photos by Jerry Strong

A California Field Trip

SILVER LAKE Country could be the name of an elongated, trough-like valley containing shimmering lakes surrounded by mountain ranges. It could also be highly mineralized and rich in history; encompass ghost towns and provide a giant playground for those who enjoy the great outdoors. Indeed, it is all this and more—a winter wonderland at the southern end of Death Valley on California's Eastern Mojave Desert.

Severed by Highway 127, large numbers of motorists travel through Silver Lake Country during weekends and holidays. They are usually bound for Death Valley, Dumont Dunes or points north. Few even notice the three lake beds or half-dozen roads leading into the backcountry. Consequently, the regions remains uncrowded and unspoiled.

There are roads to roam which lead to old mines, ghost towns and several former mining camps. A four-wheel-drive trail allows exploration of a long section

of Borax Smith's fabled Tonopah & Tidewater Railroad. Bring along a metal detector and "go over" the several sidings along the route. A nice talc specimen can easily be added to a mineral collection—some material is suitable for carving. There is also plenty of open country for camping under the stars. There may be an added bonus—if weather conditions have been favorable, desert lilies will be blooming in April and May along with a myriad of other wildflowers.

Silver Lake is the largest of three playas in this desert region. They are dry, it is true, but their flat bottoms shimmer and radiate in the sun's rays. Mirages often make the lakes appear to be water-filled. Sometimes, the water is for real as the consequence of heavy thundershowers or surplus water from the Mojave River.

The hub of Silver Lake Country was the little town of Silver Lake on the eastern lakeshore. Its location was the focus

of crossroads on the eastern Mojave. Roads led southwest to Barstow; west to Randsburg; north to Death Valley and Tecopa; east to Goodsprings, Nevada plus Ivanpah and Nipton, California, as well as southeast to Cima, Kelso and camps in the New York Mountains. By 1905, Silver Lake's general mercantile store, Rose-Heath-Fisk Company, and saloons were doing a thriving business.

Seven miles south at Baker Station, the Salt Lake Railroad Line had been completed across the desert and on into Utah. When Borax Smith pushed the rails for his Tonopah & Tidewater Rail-



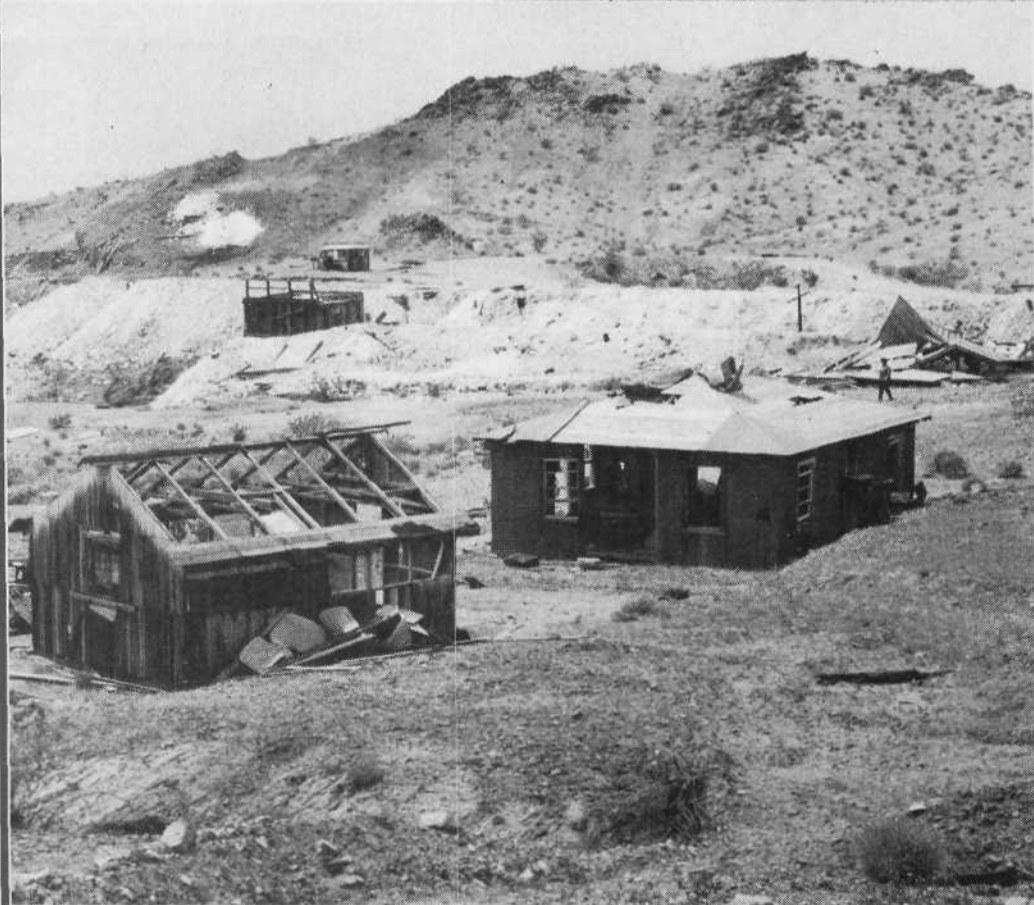
road north across Silver Lake to Rhyolite, the little community seemed assured of a bright future. However, the Panic of 1907 cast a few doubts on this.

Silver Lake's population hit an all-time high of 135 in 1918. Mines in the area were operating, as was a mill on the lakeshore near town. After World War I, mining went into a slump and people began to move on. The mercantile store closed in 1927 and 1933 found Silver Lake officially dead—the post office had been closed.

One old building, tamarix trees plus numerous foundations and mill piers,

Right: The little Silver Lake cemetery is located on a forlorn, windswept bajada. It is, perhaps, a more suitable, final resting place for "free souls" than its crowded metropolitan counterpart.

Below: Remnants of the camp at the Silver Lake Talc Mine include several buildings, gangue dumps and adits, all attesting to a history of 45 years continuous mining activity.



piles of discarded talc and a truck scale mark the former site of Silver Lake along both sides of Highway 127. A graded dirt road leads northeast to an abandoned substation of the Metropolitan Water & Power Company. Along the way, a well-preserved dugout will be seen on the right. You will find the few remaining ruins at Silver Lake both picturesque and photogenic.

We stopped at the little Silver Lake Cemetery just north of town. There were 12 graves with only two still marked. One of the latter, Harry "Death Valley Jack" Nickerson, 1897-1932, was prob-

ably one of the region's colorful characters.

There is a choice of several routes for exploration of Silver Lake Country. We found the loop trip from the old ghost town to the talc mines, on to Riggs Siding then north along the old railbed to Valjean Siding more enjoyable. We spent several days in the region and made side trips to the sites shown on the accompanying map.

Leaving the ghost town of Silver Lake, we followed a graded road northeasterly to a junction with a powerline road. We turned right and wandered easterly

through the northwest corner of the Turquoise Mountains. It was mid-May and the entire region was a wildflower garden. There must have been some late spring rain in this area as the rest of the desert's wildflower bloom was long gone.

Shortly after entering the mountains, a road "Y" appeared and a sign on the powerline road warned "Private Property. Keep Out." We kept left into a wash where old sections of paving indicated we were on a former mine road. In a little over four miles we reached a junction and again turned left. Detailed mileages are given on the map of Silver Lake Country.

To the east we could see the sizable talc deposits known collectively as the Silver Lake Talc Mine. Here, in a two-mile ore zone, concentrations of minable talc have developed in the form of shistose masses along margins of tremolite bodies. Most of the talc shist and tremolite rock are snowy white and medium to coarse-grained. The mineable bodies showed a thickness of about 10 feet and ranged from 30 feet to some 800 feet in length.

The main camp was our destination. Using binoculars we studied each mined area and quickly located the camp. In a few minutes we were standing in its ghostly ruins. It is always sad to view the remains of a once lively mining camp where hopes, joys and sorrows had come to pass. There was evidence everywhere—a woman's shoe, child's toy, broken dishes, tools—of the people who had lived and worked here.

Five residences lay in shambles from vandals. One side of the most substantial house had been rammed by a car. Win-



Several former sidings lie along the abandoned Tonopay & Tidewater railbed through Silver Lake Country. There is little above ground now to mark their locations, but they should be of interest to metal detector enthusiasts.

moss and inclusions of talc. The latter gave the slabs a silvery sheen—very attractive! It pays to look around. You never know what might be found, even at a talc mine.

The Silver Lake talc deposits lie idle now though they were mined almost continually for over 45 years. Along with two other mines (Western and Inyo Talc) they became the principal source of raw material used in machined insulator bodies when imported talc of this type was cut off during World War I. Between wars, the talc was processed in grinding mills and sold for use in ceramic, paint and rubber industries.

In later years, almost all the talc from the Silver Lake Mine was used as raw material in wall tile. The ore was hauled to Riggs Siding for shipment until the Tonopah & Tidewater Railroad ceased operations in June 1970.

Most of the mines in Silver Lake Country are now idle (talc, silver, gold) and many of the formerly graded roads are no longer maintained. However, except for some sandy stretches north of Riggs Siding, pickups and motorhomes shouldn't encounter any problems.

From the old mining camp, we had a bird's-eye view of the surrounding country and could see several roads not shown on our 1950 topo map. We decided to follow one heading north toward the Silurian Hills and hoped we would join a road at their base which would lead down-slope to Riggs Siding. If the road dead-ended we could always back-track. It was slow going because fast-moving water had cut small washes across the road. Flowers were everywhere and the view magnificent with the lofty Avawatz Mountains as a backdrop.

At the base of the hills we joined a newly graded road and headed west. Several mines were passed before we reached Riggs Siding. Only a cement slab, piles of talc and old cans mark the

dows in all the buildings were broken; sheeting ripped off; doors and shelves torn down. Shotguns had been fired point blank at all the structures. It looked as if someone had gone beserk in an attempt to satisfy an appetite for wanton destruction. Fortunately, it was late spring and among the chaos apricot mallow, creosote bush, phacelia, gilia and filaree were in full bloom. Their colorful blossoms softened the scars of destruction.

While Jerry took some photos, I looked over one of the large dumps and

picked up a nice chunk of talc. I always like to bring home a specimen from the various areas we visit and add it to my "travel memories" collection. Then, much to my surprise, I noticed a piece of material resembling chalcedony. Closer inspection revealed it had a chalcedony coating and a vug on one side, weighed about five pounds and was approximately ten inches long.

I figured the chalcedony was probably only a thin coating but took it along anyway. When cut, my specimen turned out to be solid chalcedony containing black



This old building and tamarix trees are the only "standing survivors" at the ghost town of Silver Lake.

site which was once a busy loading point for a number of mines. Forty years of occupancy make these old sidings—Silver Lake, Riggs, Valjean—of special interest, if your hobby is metal detecting. Such sites, generally, yield some good finds.

We headed north from Riggs Siding toward a pass in the Silurian Hills. Along the way, we were treated to the sight of a small stand of desert lilies in bloom. The road became quite sandy and from this point is not advisable for cars other than four-wheel-drive.

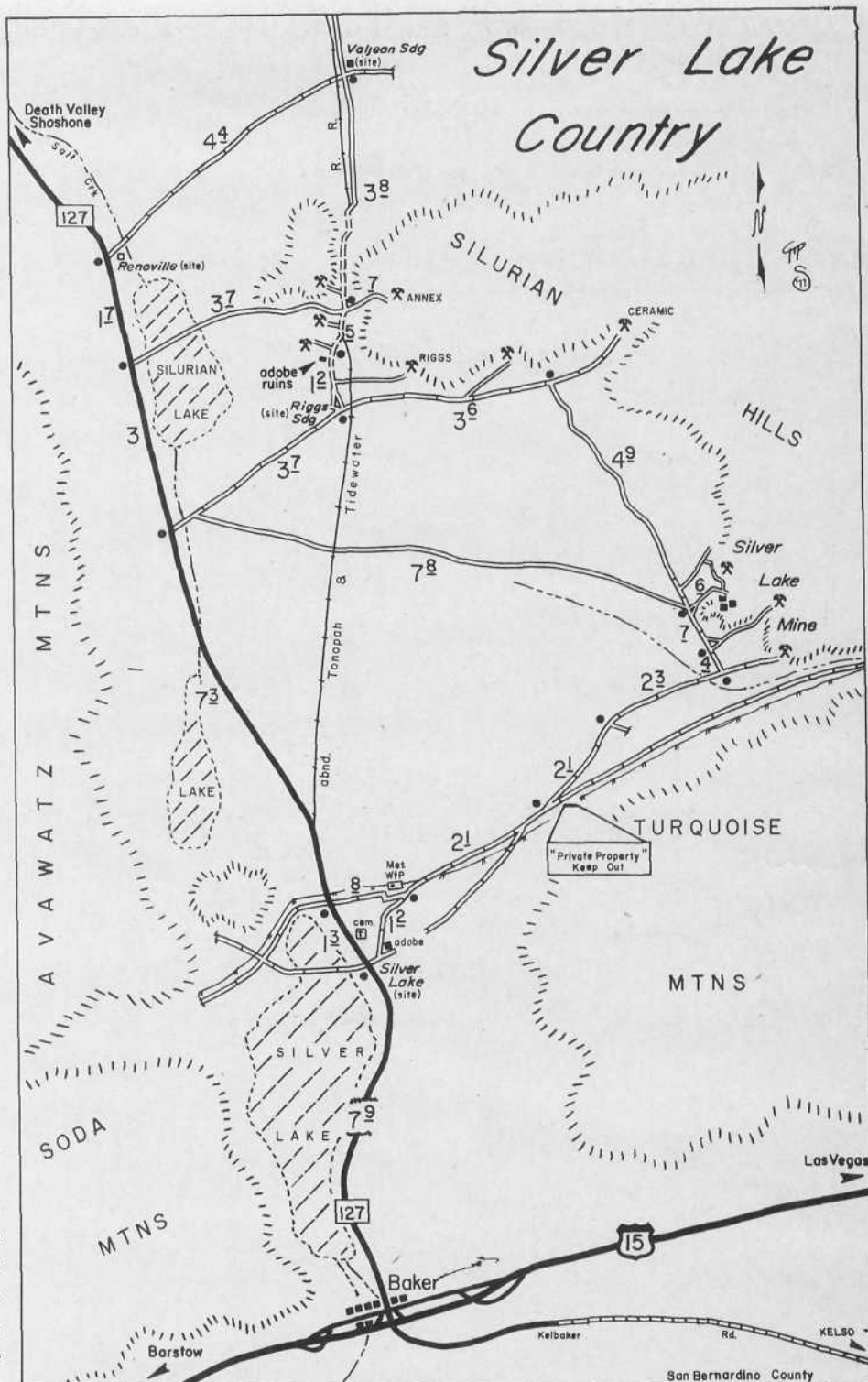
As we entered the pass, some ruins appeared on our left. Not much was left of what seemed to have been a fair-sized building—just the foundation and a partial corner section. The adobe brick construction was similar to the ruins at Sperry Siding in Amargosa Canyon so we assumed it was built for the railroad. Bits of purple glass and soldered cans indicate the site as pre-1915.

Behind the ruins, a short road led up to a mine in the hills. The adit seemed to have been used for living quarters in more recent times. Rock work supported paths and a fancy, two-hole privvy was built over a minor ravine.

Continuing north, our road joined the T&T railbed which had almost been covered with blow sand. A short distance beyond, an east-west road crossed the right-of-way and lead east to the Annex Silver Mine. By turning left at this point, the road skirts another mine, goes down a short canyon, crosses Silurian Dry Lake and joins Highway 127.

We looked over the Annex Mine then continued our journey north. It was a four-mile, fun drive of up and on the old railbed; off, down and around deep cuts and trestles; through sand and washes to the site of Valjean Siding. The large amount of debris here seemed to indicate considerable occupancy over a long period of time. Yet, we didn't see any foundations. Perhaps this area had been a base camp for railroad workers when pushing the tracks through the Dumont Dunes Region.

Railroad sidings not only served the railroad but were important to early motorists. A road of sorts usually followed along the tracks and early guide books always mentioned which ones had water, parts, food and sometimes shelter—should they be needed. Travel was slow and often hazardous during 1905-1940.



While we had wandered around Valjean, the sun had dropped behind the Avawatz Mountains. It was time to return to camp and we reluctantly headed west to the highway. We just couldn't resist a short stop at Renoville—a small, short-lived town a little east of the pavement. A few foundations and rubble tell of its existence. Quite possibly, a saloon was the main enterprise.

Our stay in Silver Lake Country had been most rewarding. We had reveled in the beauty of wildflowers; taken pleasure in visualizing the mining activities;

flinched at the thoughts of discomforts endured when working and living in this hot, arid region—long before the advent of refrigerators and air conditioners.

We had followed along old trails built for mining trucks, the railroad and Model T Fords. Yet, we were never more than seven miles from a paved highway. We had watched travelers race madly through our desert retreat oblivious to its charms. Somehow, we felt selfish in our deep pleasure of the few days when Silver Lake Country had been ours alone.

FIRST IN A SERIES ON

NATIVE PLANTS AND

THEIR USES.

ANCIENT FOOD FOR MODERN TABLES

by LUCILE WEIGHT

NATIVE FOODS which Indians, Spaniards, Mexicans and early whites ate of necessity are receiving renewed attention. We seem to be on the return lap of a spiraling cycle, after a period of clamoring for synthetic foods.

Cactus, once an important food source, later went to waste, or was burned and plowed up. But even though processed products have replaced most homegrown or wild foods, some desert people have developed cherished ways of making cactus sweets from fruits of

the flat-stemmed *Opuntias*, and markets carry jars and cans of "nopalitos," the cooked cubes and strips of the green pads. Some California growers have supplied New York markets with the fruit, and many years ago I saw them in a Los Angeles central market.

There are protective laws for cactus and other plants, so don't go rushing out to the desert for loads of native fruits. They can be grown as hedges or in decorative groupings in the garden. It is surprising how many people who do

have *Opuntias* leave the fruits to the birds and rodents.

The "tuna," one of several common names, was one of the fruits first tasted by men with Cortez as they reached the New World in 1519. To them it was a "kind of fig," and soon was sent to Spain and elsewhere in the Mediterranean. Those first Spaniards found the tuna was important on Aztec tables. Later this cactus became a symbolic, legendary plant for the Mexicans.

Farther north, Indians of many tribes were using the cactus, some species providing food, medicine, fiber, glue. In 1752, Spaniards exploring west of the Hopi Mesas, probably in Yavapai or Havasupai land, were given "dates," believed to be prickly-pear cactus.

Tewas and probably others near the Rio Grande ate the fruit. Boiled until tender it was added to cornmeal porridge. Indians would throw the buds or fruit into a pot to add flavor to gruel made of seed-meal, or dry them for use in winter, when they would boil them into a kind of sauce. The flower buds were delicacies but the fruit crop was reduced when these were gathered for pit-baking or steaming. The Pimas steamed the buds, which could be kept till later, and be added to pinole or to saltbush (*Atriplex*) greens.

Probably most of the harvest was eaten fresh. If the Indians found a good supply they cooked the fruit for sweets and syrup, or split and sun-dried them much as the Navajo treated peaches when those fruit trees were introduced to such places as Canyon de Chelly.

TACKLING TUNAS

I cannot understand the nonchalance with which some writers instruct us to "roll off" or "rub off" the spines, when handling cactus fruit. Many of the spines are rubbed off in jostling enroute home. A good many penetrate the "pear" flesh, but clusters of almost invisible bristles or glochids are still there. The sting remains after they apparently have been extracted from one's skin. Kitchen tongs are good for detaching the pears from low plants, but several thicknesses of newspapers can be used. Navajo, among others, used wooden tongs or a forked stick to detach the fruit from pads. Long experience can make handling something less than an "event." The Cahuillas, for instance, are said to be adept artists at peeling fruit.

If you have access to the mission type that sometimes grows 12 and 15 feet high, you might devise another gathering technique. My husband, Harold, nailed a No. 2 tin to the end of a seven-foot pole to nudge off many, but this size can was too small to hold some of the fruits. Moreover, he could not get the right angle for forcing it off, even when he changed to a coffee can. The tough fiber yielded to a bindery knife bound to a pole, and the big fruits dropped into the extended can.

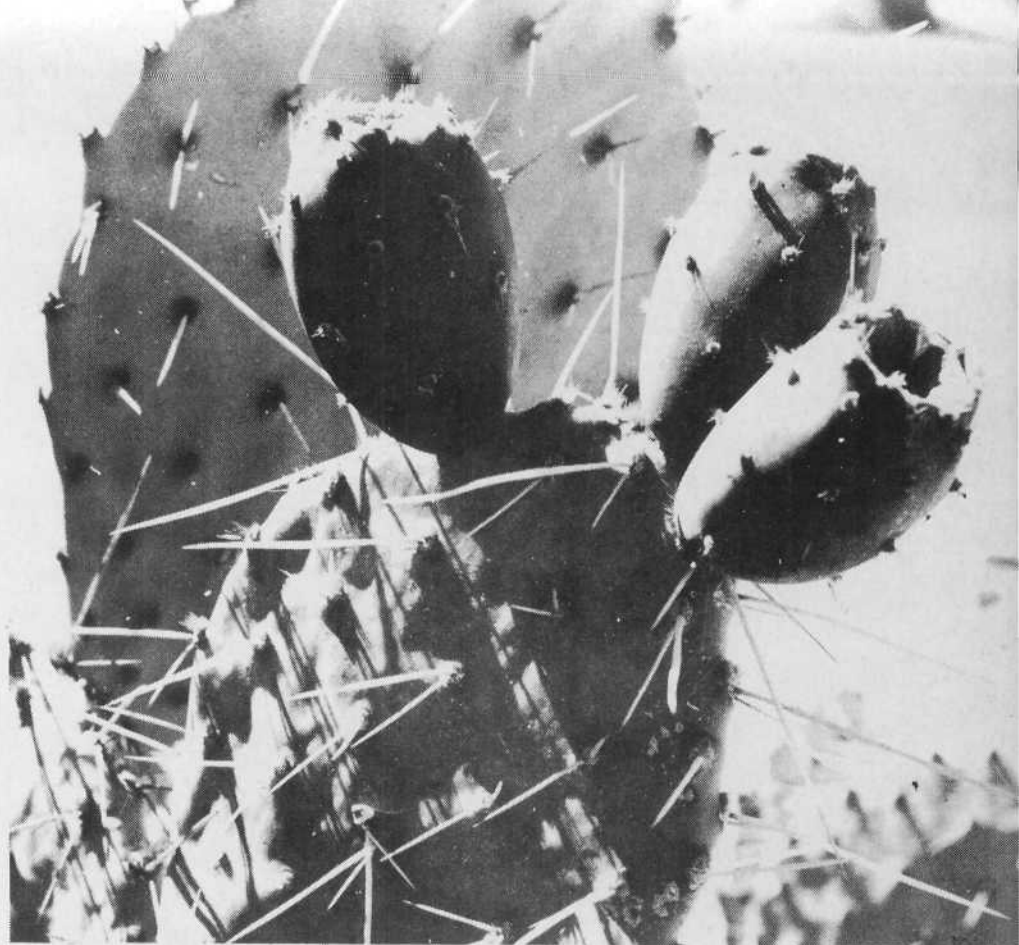
The remaining spicules can be rubbed off with a paper towel, but singeing in the flame of a gas range is better. Hold the pear with fork inserted in the tough flower end; rinse and wipe dry, and you have a glowing "apple" or ex-prickly pear ready to use in many ways. One of our favorites was preserves, from the huge yellow-meated variety. When completely ripe, this kind has the color of an unknown wild honey; its cooked juice is a medium amber, and the sieve pulp and juice are what I call Papago Sunset, red-gold-orange.

Juices of the different varieties make beautiful food colorings—magenta, crimson, scarlet, apricot.

We preferred preserves, jams, marmalade and conserve to jelly, mainly because these have a richer fruit flavor. I found that a spoonful or two of the marmalade added an intriguing flavor and texture to bar and other cookies or brownies. And I made what I called nopal honey, good on baked ham, especially diluted slightly with orange or tangerine juice. Or, broil grapefruit or orange slices and add a spoonful just before removing from the heat.

The fruits also can be pureed (easier when simmered until tender) and used with fruit salad dressing or as dessert sauce.

One of my by-products was something I learned later was an ancient food—cactus leather or *cajeta*, and a variant, the *queso de tuna* of early Californios. I could not bear to discard the beautiful pulp remaining from jelly and syrup, so I spread it in a long pan and left it in a very low oven until dry. It can be pulled up, cut into squares or strips and stored for natural candy. To make it richer in flavor (and calories) cook the pulp with equal sugar, slowly, for an hour or until almost dry, pour onto tray, dry in sun or oven.



Above: Several species of *Opuntia* grow in low hedges or thickets in Southern California mountain valleys and deserts of California and Arizona.

Intergrading makes specific identification difficult.

Right: Fruit of this *Opuntia* is dark crimson. Spines are sparse but watch out for those innocent looking glochid clusters or areoles.

The seeds are embedded in rich red matrix surrounded by a rather firm flesh. At times Indians ground seeds instead of discarding them.

Photos by Harold O. Weight.



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To the blander varieties I added a few whole cloves or a bit of cinnamon bark. Some preserved ginger root was just right with the preserves of the yellow nopals; fresh mint or a hint of fresh sweet-basil with jelly. Most of the marmalade I made using cactus included kumquats as well as orange and lemon.

I found great variation in color of fruit and juice, in thickness of skin and its adhesive character, in fragrance, odor and flavor, as well as sugar content. Such differences also were noted by Luther Burbank during his work with cactus, some of which he said had 12 to 16 percent sugar content. (A sugar difference could account for failures in some jelly making.)

CACTUS "VEGETABLE"

While the flat stem pads or slabs of *Opuntia* have served as a crisis food for cattle in the Southwest, they have been used widely also by Indians and others. If growing pads are taken in summer when they are about half-size, they are more tender and tasty; also spines have not developed. Older pads need to be de-spined and "skinned."

The ancient pit-baking, used by Panamint and other Indians, softened the older pads, but the stringiness remained. Various methods have been used by Cahuillas and Serranos. Cooking is simpler when the pad is diced or cut into "string beans." Now they are ready to dry and store for later use in stews or other dishes, or to be used immediately in many recipes. Unless the pad is very young it should have the outer skin stripped off, after de-spining. Many markets now have canned nopalitos, handier but having a different texture and taste from the fresh.

Boiled nopalitos, thoroughly drained

then fried crisp, may be served with a tomato sauce, or bacon bits, or chili paste.

An early Spanish-California dish combined cubed pads with fresh tomatoes, a green chili, an onion, garlic, all added to a small amount of hot fat (olive oil if you like it), with a simple seasoning, and simmered 20 to 30 minutes.

A Mexican family in Imperial County in recent years annually canned cactus, the children being kept out of school to help. The de-spined pads were boiled with whole onions until almost tender, then put into sterilized jars, with bits of onion, slivered garlic and tiny red Japanese chiles. Later the mother added portions to egg dishes, to shrimp or tomatoes.

Marth Chacon, Serrano at San Manuel Indian Reservation near San Bernardino, uses diced tender pads, boiled and drained, to cook with ground beef, chili powder and chopped onion.

Some make a pickle from strips of the very young joints.

There are countless ways of using nopalitos, canned or home-prepared—add them to chilies, onion and cream or Jack cheese; or in salad with chopped tomato, onion, fresh herbs, oil and lemon juice; or with minced green pepper, green or ripe olives, pimientos and French dressing, on lettuce.

While the barrel cactus (*Echinocactus*) is used for the famous cactus candy, *Opuntia* pads can be candied into something like preserved citron.

Once you have experimented with this native food, you may enjoy new taste adventures and at the same time gain some appreciation of the Indians who for centuries used many kinds of cactus as a regular addition to the menu. □

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BREYFOGLE

Continued from Page 31

comparison of its ore with specimens of Breyfogle ore, which were supposed to be in existence. The search for that will-o-the-wisp Breyfogle ore, which I never found, is a story in itself. But of the richness of Round Mountain ore there can be no question.

Bert Acree told me of his visit to the Round Mountain mill in 1909. Only one door was open, and visitors were asked to put their hands in their pockets before they walked within the reach of the conveyor belt. Bert said there were nuggets all along the belt, and gold sticking out all over the ore on it. In an area 300 feet long and 100 feet wide, right in front of the company offices on that reddish southern slope, placer men took out \$16,000 in one month.

Edward A. Michal, who had come as mill foreman in 1911, was acting as caretaker when I first visited Round Mountain. While he was foreman, he said, the mine had produced about \$5,000,000. (Millions more were produced before and since.) As to it being the Breyfogle—a new idea to him—it was quite possible, he thought. The ore was very red—especially the Los Gazabos vein. He took me up the hillside to show me what was left of that reddish-purple ledge. Right under it had been Round Mountain's glory hole, mined down 350 feet, then filled in with waste rock.

Michal showed me a specimen he had picked up in 1911—right on that southern slope Breyfogle might have crossed. It was small—2½x1x1 inches, but it was more than half gold. One entire surface was partially crystallized yellow metal. A dark red band ran through the center. The other side was a mixture of gold and red iron oxide, coated with white.

Seeing that gold, looking at Los Gazabos vein, and on down the Big Smoky toward Baxter Springs, I mentally crossed the Breyfogle off my lost mine list. I published a story in 1951, reiterating that conviction. Since then I have heard and read so many other Lost Breyfogle accounts, by people equally convinced, my assurance has wavered.

But did Breyfogle twice during those wanderings leave a spring and cross or pass near reddish hillslopes covered with rich golden ore? Isn't it more reasonable



Round Mountain [left] looking across Big Smoky Valley. Toquima Mountains in background. Waste piles of placer operations [right] are forming new mountains.

that, heat-struck, half starved, always thirsty, Breyfogle might have become confused in the sequence of days? He remembered leaving a watering place and then finding rich ore on a reddish slope. Could he have confused Coyote Holes and Baxter Springs? Could that phantom red hillside in Death Valley have been the real reddish slope of Round Mountain?

If that first expedition had backtracked Breyfogle, prospecting as they went, there might never have been a Lost Breyfogle. Probably they would have found that reddish, gold-littered spot on Round Mountain. Would they have doubted that this was Breyfogle's discovery? Would Breyfogle have doubted it?

This much is certain: The Lost Brey-

fogle is not where Breyfogle thought he lost it. Breyfogle did pass near Round Mountain. Round Mountain ore seems identical with Gooding's description of Breyfogle ore—and it was rich enough that a man might well have spent the rest of his life trying to relocate it. □

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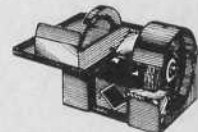
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Rambling on Rocks

by
GLENN and
MARTHA VARGAS

Our Lapidary Editors have returned from an extensive tour and were greeted with unusual weather!

TROPICAL STORM ON THE DESERT: Rolling Rocks

THE SOUTHERN California Deserts have just experienced the fury of a tropical storm. To be more to the point, it was the end of Hurricane "Kathleen." We have often wondered if a hurricane could strike here. A look at the desert mountains with their deeply eroded canyons, and the huge alluvial fans that lie below them, has often made us suspicious that no succession of "flash floods" could have carved them. After we had lived here for a few years, and had experienced some of these flash floods, we decided that a hurricane was the only answer to this massive erosion. We could find no records of such a storm, but often heard reference to

"100-year storms."

Caucasian man's occupation of the desert has not been much more than this 100 years, and his record keeping has been less. We thus reasoned that if this time interval was true, then the storm, whatever it may be, was due.

About the middle of this September, Hurricane Kathleen made its way to the north from the eastern tropical Pacific, and skirted the west coast of Mexico. As it approached Baja California it was a full blown storm and created much havoc in a number of parts of the peninsula. By the time it reached the United States border, it still was a formidable storm with a mass of moisture-laden clouds, but its winds had greatly abated.

At the same time, the storm met a cool air mass moving southward along the Pacific coast. When the two met, the water was dumped, and the 100-year "prophecy" came true. Some desert areas of San Diego County received more than 10 inches of rain in slightly over 24 hours. The mountains just to the west of Palm Desert (the home of *Desert Magazine*) received about eight inches of rain in less than 24 hours. The floor of the Coachella Valley received better than four inches, which is slightly over the yearly average! This is a nearly flat desert basin, surrounded by desert mountains. Large amounts of water, such as fell during the storm, must go somewhere. If it falls on the mountains, it rushes madly downhill. If it falls on the flat areas, it runs off very slowly, and is added to by that which runs down from the hills.

What happens when such large amounts of water are dumped on land with very little vegetation? Depending upon the slope on which it falls, it moves downward. It first gathers in small washes, and these run into larger ones. The amount of water that can gather in a good-sized desert wash is often unbelievable. When it empties into a desert basin, huge lakes are quickly created. Some desert basins have no water in them for decades, then suddenly in a few hours they become a large lake.

The result of this massive water movement is the phenomenon the geologist calls erosion. Simply stated, erosion is the movement of rock (in various sized particles) from one place to another. The speed of the rock movement depends upon the carrying agent. The faster the

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agent (in this case water) moves, the greater the amount of rock particles that are moved, and also the greater the size of the particles.

A most interesting physical principle is involved here. One might think that as the speed of flowing water is increased, the amount and size of rock particles that can be carried would increase at the same rate as the increase of speed of the water. Not so—the carrying power is increased 16-fold!

Let us assume that with a given stream moving at a moderate speed, it can just move a pebble with a displacement of one cubic inch. If we could double the speed of the water, we now have twice as much water striking any rock lying in the water. The change does not stop here, however, for each particle of water is now striking with twice the original force. We have squared the speed of the water, and also squared the force with which it strikes. Thus we have raised the carrying power of the water to the fourth power, or 16 times. Now the water can move a rock of 16 cubic inches. If we could again double the water speed, a rock 16 times as large as the second rock could be moved— 16×16 equals 256.

Coupled with this is the matter of specific gravity. Most rocks have a specific gravity of about three. This is three times heavier than water for like volumes. When a rock is lying out in the open, it is exerting its full weight on the material beneath. A rock with a specific gravity of three loses one-third of its weight. One with a specific gravity of four loses one-fourth of its weight, etc.

When a rock is suddenly submerged in water, the forces of the water that strikes it are exerted against it when it suddenly has lost weight. Thus, it is possible for a sudden flood to move very large rocks. It is also possible for the water to pick up so much silt and sand that it becomes thick mud, and if the slope is reasonably steep, this mud will flow exactly like the water itself. We have seen where this mud has actually flooded chunks of pavement (asphalt and gravel) that have been torn loose by these 16-fold forces.

Nearly 10 years ago, the end of a hurricane (Katrina, another K) struck the town of San Felipe, in Baja California. Automobiles were moved down the washes. Adobe and stone houses were torn apart and carried down the washes.

Enough sand was washed down onto the beach (on the Gulf of California) to change it so much that boats could not come within 200 yards of where they had come before the storm!

The greatest damage done by Kathleen, our recent storm, took place in Imperial County, just to the north of Baja California. Water rushing down from the desert mountains of San Diego County gathered in huge washes and virtually removed the small town of Ocotillo. Damage to some Imperial Valley farmland, from being covered by silt, was extensive.

As awesome and surprising as this recent storm was, we firmly believe that it was really only a moderately large one. On the hills to the west of our home, the sides are covered with huge boulders, some as large as a medium-sized house. The recent storm evidently did not move them, but they have been moved to their present site at some time in the past.

Immediately after this storm, we heard the statement that we could not expect another for 100 years. Almost exactly two weeks later, Palm Desert had another storm, this time not the end of a tropical one. Damage was not as severe, but nevertheless, it was somewhat like adding insult to injury. Thus, it is very evident that storms do not follow a calendar, or any human rules. Without any attempt to frighten anyone, we feel that there is always a prospect for a larger storm, and we do not believe that the 100 years will pass before it comes.

Some sage in antiquity said, "It is an ill wind that blows no good." In this case, we will change the word wind to storm, and it did blow some good, as well as bad. First, many people have now lost their complacency about desert weather. We notice an awareness of the fact that the "rainless" desert can be rained on, and in huge amounts. Perhaps officialdom may subscribe to the thought that the desert should not be covered with dikes (one broke, causing most of the damage in Palm Desert.) We also hope that this awareness will keep communities from being created astride of washes.

Another benefit of the storm is that the rains came just as the desert was cooling from summer. Desert plants grew and are now (mid-November) blooming. The plants thought it was springtime! □

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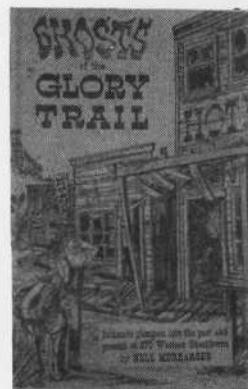
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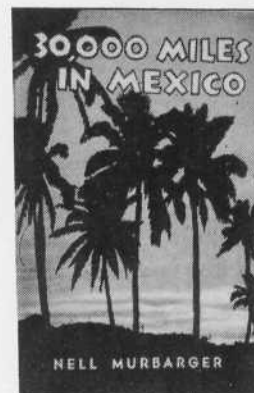
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THE DESERT by Russell D. Butcher. Superb photography and excellent text make us fully aware of the richness of Mr. Butcher's desert experience. Informative guides to the parks, wildernesses, desert gardens and museums also included. Large format, hard cover, \$17.50.

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NEW BAJA HANDBOOK for the Off-Pavement Motorist in Lower California by James T. Crow. Discover the real Baja that lies beyond the edge of the paved road, the unspoiled, out-of-the-way places unknown to the credit-card tourist. The author, drawing from his extensive travels in these parts, tells where to go, what to take along, the common sense of getting ready. Illustrated, paperback, 95 pages, \$3.95.

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BAJA CALIFORNIA GUIDEBOOK by Walt Wheelock and Howard E. Gulick, formerly Gerhard and Gulick's *Lower California Guidebook*. This totally revised fifth edition is up-to-the-minute for the Transpeninsular paved highway, with new detailed mileages and descriptive text. Corrections and additions are shown for the many side roads, ORV routes, trails and little-known byways to desert, mountain, beach and bay recesses. Folding route maps are in color and newly revised for current accuracy. Indispensable reference guide, hardcover, \$10.50.

WILDLIFE OF THE SOUTHWEST DESERTS by Jim Cornett. Written for the layman and serious students alike, this is an excellent book on all of the common animals of the Southwest deserts. A must for desert explorers, it presents a brief life history of everything from ants to burros. Paperback, 80 pages, \$2.99.



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OREGON'S GOLDEN YEARS by Miles F. Potter. Men in search of treasure opened the gates to the wilderness. *Oregon's Golden Years*—with affection and good humor—honors these men and their imperishable lust for gold. Paperback, large format, lavishly illustrated, extensive Bibliography and Index, \$7.95.

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A FIELD GUIDE TO THE COMMON AND INTERESTING PLANTS OF BAJA CALIFORNIA by Jeanette Coyle and Norman Roberts. Over 250 plants are described with 189 color photos. Includes past and present uses of the plants by aborigines and people in Baja today. Scientific, Spanish and common names are given. Excellent reference and highly recommended. 224 pages, paperback, \$8.50.

DEATH VALLEY GHOST TOWNS by Stanley Paher. Death Valley, today a National Monument, has in its environs the ghostly remains of many mines and mining towns. The author has also written of ghost towns in Nevada and Arizona and knows how to blend a brief outline of each of Death Valley's ghost towns with historic photos. For sheer drama, fact or fiction, it produces an enticing package for ghost town buffs. Paperback, illus., large format, \$2.95.

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DOWN THE COLORADO: The Diary of the First Trip Through the Grand Canyon, photographs and epilogue by Eliot Porter. Contains John Wesley Powell's dramatic journal of 1869 when ten men in four boats swept down the raging Colorado River, over rapids considered impassable, to chart the unexplored river and its surrounding canyons. Includes a 48-page gallery of four-color photographs by America's foremost photographer of nature. Hardcover, large 10 1/4"x14 3/4" format, 168 pages. Originally published at \$30.00, now priced at \$9.98.

ROAMING THE AMERICAN WEST by D. E. Bower. Superbly detailed adventure and activity guide to 110 scenic, historic and natural wonders in 11 Western states for the family and sportsmen—from dinosaur stamping grounds in Colorado through ghost towns, prehistoric Indian villages, abandoned mines, wilderness areas, etc. Lavishly illustrated with photos and driving maps. Large format, hardcover, originally published at \$12.50, now priced at \$4.98.

STAGECOACH WEST by Ralph Moody. The lively story of stagecoaching in the West, which provided the lines of rapid communication, hauled the wealth of a new nation, and helped Americans settle the region between the Missouri and the Pacific. Well illustrated, including many detailed maps. Hardcover, 341 pages, originally published at \$8.95, now only \$3.98.

A HISTORY OF THE COMSTOCK SILVER LODE AND MINES, Nevada and the Great Basin Region, Lake Tahoe and the High Sierras, by Don De Quille [William Wright]. Gives an excellent description of Nevada mining, particularly in the period of its greatest productivity. Also includes history of the region, its geography and development. Hardcover, one of the "America's Pioneer Heritage" Series, 158 pages, originally published at \$6.95, now priced at \$2.95.

THE WESTERNERS by Dee Brown. The author follows the frontiersman into his heroic world—tells the story of early explorers, trappers, fur traders, Forty-niners, builders and operators of stagecoach and mail services, telegraphs and railroads—through the experience of a few influential, representative Westerners—white men, white women and Indians. Hardcover, beautifully illustrated with color and black and white photos, 288 pages, originally published at \$17.95, now priced at \$7.98.

THE OLD TRAILS WEST by Ralph Moody. The story of great legendary routes that bound a wild land into a nation. The Oregon Trail, El Camino Real, the Butterfield Overland Mail, The Santa Fe Trail and many more names that conjure up the romance of the past. It recounts the true stories behind the trails and how they contributed to the settling of the West. Illustrated with maps and reproductions of authentic old prints. Hardcover, 318 pages, originally published at \$8.95, now only \$3.98.

THE GOLD MINES OF CALIFORNIA: Two Guidebooks. Includes *California and Its Gold Regions* by Fayette Robinson. A typical guidebook which was rushed from the presses to sell to the Forty-niners; and *California in 1850 Compared With What It Was in 1849, With A Glimpse At Its Future Destiny* by Franklin Street. More realistic and lacking the flamboyant optimism which marred most of the 1849 guides. Hardcover, another in the "America's Pioneer Heritage" Series, originally published at \$10.00, now only \$2.95.

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Letters to the Editor

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More on the Pinacate Beetle . . .

I would like to add a few observations to those made in K. L. Boynton's interesting article on the pinacate beetle, *Eleodes armata*.

Despite their protective air space (elytra) under the shell, these beetles are vulnerable to extreme heat. One summer day, I placed several beetles out in the open area, exposed to the sun. They momentarily raced around, and then headed for the nearest shady patch of trees, but they never made it and rolled over dead.

The researchers quoted gave the figure of 64 feet as the maximum distance traveled by beetles studied. I have followed solitary beetles for two hundred yards and the critters were still going straight ahead, at a pace of an average man. Just where they were headed for, God only knows!

One summer, almost every evening for several days swarms of black beetles appeared out of the desert, most of them trying to enter my doorway. I scooped up about 100 of them and observed them for about six months. Deaths were rare. They did well on lettuce, and were still going strong when I released them in the desert, having touched each one with a spot of white paint. However, none of them were ever seen again.

These beetles must give the evolutionists fits, because they don't follow the rule of adaptation to the environment. They have nothing going for them, except a hard shell. They have the wrong color; appear in swarms where they can be exterminated in large

quantities; run around in broad daylight, and travel long distances in the open, taking no evasive action when an enemy appears. Standing on their heads scares no one, and their chemical attack is no more noxious than the smell of photographic chemicals.

I give up on trying to figure out just how these bugs got to where they are. Does anybody know?

WILLIAM H. KUPPER,
Palm Desert, California.

Chaffin's Ferry . . .

I have been a subscriber to *Desert Magazine* for more years than I can remember and have enjoyed every issue. I have traveled southeastern Utah for 35 years in a Jeep and other conveyances long before Lake Powell and Glen Canyon Dam were under construction.

I read your September issue on Hite and the New Bi-Centennial Highway across that Part of the country (U-95), so last weekend we took a ride through Salina, across the new I-70 to Hanksville, stayed there at the Poor Boy Motel. The next day we went down to Hite, across new U-95 to Mexican Hat and came back through Bluffs, Blanding, Monticello and Moab, and visited Bridges National Monument, Arches National Monument and Dead Horse Point—a wonderful trip.

The main reason for writing this letter is your article on Hite. I was down in that country in 1956, and took pictures of the old Chaffin Ferry. This Mr. R. Chaffin took over the Hite Ferry after Mr. Cass Hite died, and I have enclosed two 35mm slides and one picture taken off those slides from the pictures I took in 1956.

When the State of Utah dedicated this U-95 road this summer as the Utah Bi-Centennial Highway, they had Mr. Chaffin to the dedication. Mr. Chaffin lives in Teasdale, Utah and is 90-plus years old. The State of Utah borrowed my slides at one time, since they didn't have any other pictures of the Old Chaffin Raft. Perhaps your readers would like to see them, too.

TOM McCLAIN,
West Jordan, Utah.

Calendar of Events

This column is a public service and there is no charge for listing your event or meeting—so take advantage of the space by sending in your announcement. We must receive the information at least three months prior to the event.

JANUARY 22 & 23, Western Collectable Show, sponsored by the Calif. BWCA, Colonial Country Club, 25115 Kirby St., Hemet, Calif. Free admission. Write to Amos Ulberg, P. O. Box 602, Hemet, Calif. 92383.

JANUARY 29 & 30, Orange Coast Mineral and Lapidary Society Show, National Armory, 612 E. Warner Ave., Santa Ana, Calif. Dealer space filled.

FEBRUARY 11-13, Annual Gold Rush Days Show and Sale sponsored by the Wickenburg Gem & Mineral Society, Community Center, Wickenburg, Arizona. Free admission. Special Copper Minerals Exhibit. Chairman: Moulton Smith, P.O. Box 1042, Wickenburg, Arizona 85358.

FEBRUARY 12 & 13, American River Gem & Mineral Society, Inc., will hold their 12th Annual "Fiesta of Gems" show at the Mills Jr. High School, 10439 Coloma Rd., Rancho Cordova, Calif. Chairman: Ralph Darden, P.O. Box 374, Rancho Cordova, Calif. 95670.

FEBRUARY 18-27, Indio, California—National Date Festival "Gem and Mineral Show." Hosted by: Coachella Valley Mineral Society, Desert Gem and Mineral Society, San Geronio Gem and Mineral Society, Shadow Mountain Gem and Mineral Society. Fairgrounds, Hwy 111, Indio. For exhibit Premium List write: George Oswald, Supervisor, Gem and Mineral Show, National Date Festival, P.O. Drawer NNNN, Indio, Calif. 92201.

FEBRUARY 19 & 20, Tenth Annual Antique Bottle Show and Sale of San Mateo County, sponsored by the Peninsula Bottle Collectors, San Mateo County Fairgrounds, San Mateo, Calif. Admission and parking free. Beautiful and educational displays of rare old bottles from all over the West.

FEBRUARY 26 & 27, Gem and Mineral Show sponsored by the Santa Clara Valley Gem and Mineral Society, Inc., Santa Clara County Fairgrounds, Pavilion Bldg., 344 Tully Road, San Jose, Calif.

MARCH 18-20, 17th Annual Southwest Gem & Mineral Show, Villita Assembly Hall, 401 Villita St., San Antonio, Texas.





Contrasts

John Hilton

Painter of the Desert

Many art critics consider John Hilton the foremost painter of desert scenes of the West. His oils are hung in galleries throughout the United States and are constantly in demand. Desert Magazine has a limited supply of prints of his painting entitled "Contrasts" showing sand dunes covered with desert wildflowers and the Santa Rosa Mountains in the background.

This beautiful four-color print is 11x17 inches on high quality mat paper with two-inch margins, ideal for framing. Available to Desert Magazine readers, mailed rolled, in a tube, for only \$3.00, including tax and postage.

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4

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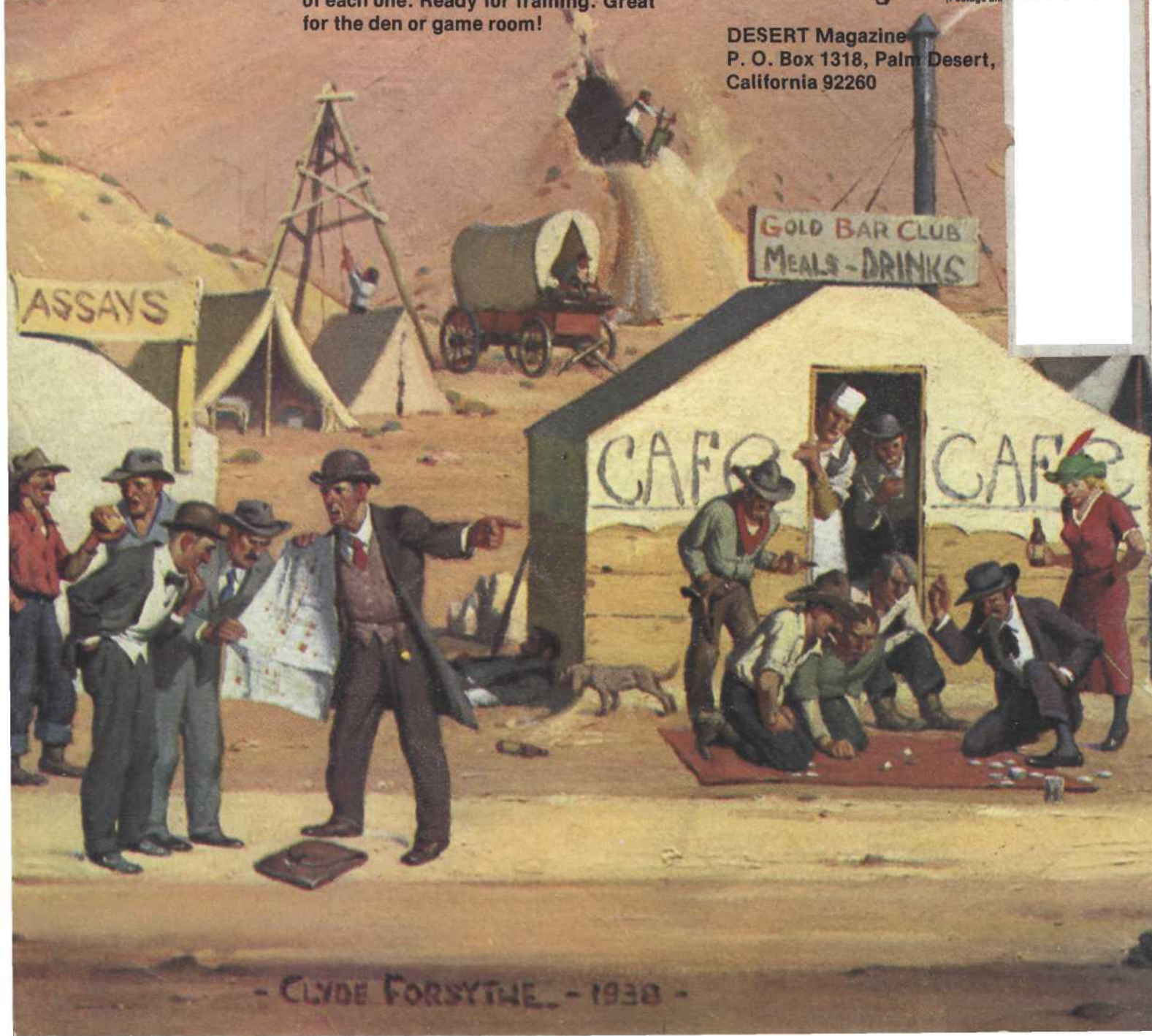
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